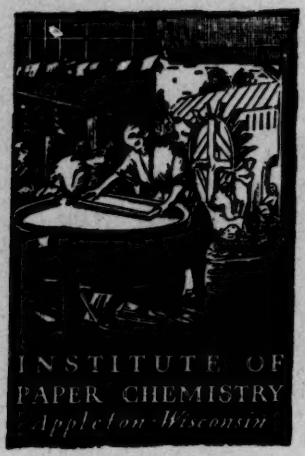
PAGES 227-296

BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

DECEMBER · 1949

Volume 20 Number 4

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Books and Pamphlets Added to the Library During November

BIOGRAPHY

WHO'S WHO in the midwest; a biographical dictionary of noteworthy men and women of the central and midwestern states. Chicago, The A. N. Marquis Company [c1949] 1355 p.

BIOLOGICAL CHEMISTRY

KUHN, RICHARD, *and others.* Biochemistry. Part III. FIAT review of German science 1939-1946. Wiesbaden, Germany, Publ. by Office of Military Government for Germany. Field Information Agencies Technical, 1948. 201 p.

CAPITALISM

GRIFFIN, CLARE E. Enterprise in a free society. Chicago, Richard D. Irwin, Inc., 1949. 583 p.

CHEMISTRY—TABLES

HANDBOOK of chemistry and physics, a ready-reference book of chemical and physical data. 31st ed. Editor-in-chief, Charles D. Hodgman. Cleveland, Chemical Rubber Publ. Co. [c1949] 2737 p.

LANGE, NORBERT ADOLPH, comp. and ed. Handbook of chemistry; a reference volume for all requiring ready access to chemical and physical data used in laboratory work and manufacturing. Assisted by Gordon M. Forker. 7th ed. Sandusky, Ohio, Handbook Publishers, 1949. 1920 p.

CHEMISTRY, ORGANIC

ZIEGLER, KARL, *and others.* Preparative organic chemistry. Part III. FIAT review of German science 1939-1946. Wiesbaden, Germany, Publ. by Office of Military Government for Germany. Field Information Agencies Technical, 1948. 352 p.

CONTAINERS

MODERN PACKAGING encyclopedia, 1950. New York, Packaging Catalog Corp., c1949. 932 p.

Divided into nine sections, the revised and brought-up-to-date 1950 edition presents essentially similar information as in previous years; the individual articles are sometimes written by different authors, and new illustrations have been substituted in most cases. Articles containing new material will be abstracted in the section *Survey of Periodical Articles.*

FOOD—STATISTICS

U. S. BUREAU OF AGRICULTURAL ECONOMICS. Consumption of food in the United States 1909-48. U. S. Dept. of Agriculture. Miscellaneous publication no. 691. Washington [U. S. Govt. Print. Off.] 1949. 196 p.

GEOGRAPHY—DICTIONARIES

WEBSTER, NOAH. Webster's geographical dictionary. A Merriam-Webster. A dictionary of names of places with geographical and historical information and pronunciations, illustrated with many maps in the text and with twenty-four maps in full color. Springfield, Mass., C. & G. Merriam Co. [c1949] 1293 p. + 24 maps on 12 leaves.

HEAT—CONDUCTION

INGERSOLL, LEONARD R., ZOBEL, OTTO J., and INGERSOLL, ALFRED C. Heat conduction with engineering and geological applications. New York, McGraw-Hill Book Co., 1948. 278 p.

INDEXES

SPECIAL LIBRARIES ASSOCIATION. *Science-Technology Group*, ed. Numerical Index to the Bibliography of scientific and industrial reports, volumes 1-10, 1946-48. Comp. by The Science-Technology Group, Special Libraries Council of Philadelphia and Vicinity, with the co-operation of Socony-Vacuum Laboratories . . . and Office of Technical Services . . . New York, Special Libraries Association, 1949. 522 p.

MICRO-ORGANISMS

ANNUAL REVIEW of microbiology. Charles E. Clifton, editor; Sidney Raffel and H. Albert Barker, associate editors. Stanford, Cal., Annual Reviews, Inc., 1949. v. 3. 476 p.

PAPER-CUTTING MACHINES

MILLS, GEORGE J. Paper cutting: machines and techniques. Pittsburgh, The Author, 1949. 26 p.

PAPER MAKING AND TRADE

AMERICAN PAPER AND PULP ASSOCIATION. Statistics of paper. 2d ed. New York, The Association [c1949] 63 p.

NEWS PRINT SERVICE BUREAU. Manual of instructions for preparing the paper mill operating report. Rev. January, 1947. New York, The Bureau, 1947. 17 processed leaves.

POISONS

HAMILTON, ALICE, and HARDY, HARRIET L. Industrial toxicology. 2nd ed., rev. and enl. New York, Paul B. Hoeber, Inc. [c1949] 574 p.

PRINTING, PRACTICAL—STYLE MANUALS

WORDS into type; a guide in the preparation of manuscripts; for writers, editors, proofreaders and printers, based on studies by Marjorie E. Skillin, Robert M. Gay, and other authorities. New York, Appleton-Century-Crofts [c1948] 585 p.

RESEARCH

SYMPOSIUM ON ENGINEERING RESEARCH. Proceedings of the Symposium . . . held at Center for Continuation Study, University of Minnesota, March 14-15-16, 1949, sponsored by The Institute of Technology and The Minnesota Branch of American Society for Engineering Education in cooperation with local industries. Ed. by C. E. Lund . . . University of Minnesota. Institute of Technology. Engineering Experiment Station. Bulletin no. 29. Minneapolis, The University, 1949. 114 p.

SPEECH

MONROE, ALAN H. Principles and types of speech. Rev. New York, etc., Scott, Foresman and Co. [c1939] 546 p.

STATISTICS—CHARTS, TABLES, ETC.

JENKINSON, BRUCE L. Bureau of the Census manual of tabular presentation; an outline of theory and practice in the presentation of statistical data in tables for publication. Washington, U. S. Govt. Print. Off., 1949. 266 p.

SULFITE LIQUOR

LUNDBERG, A. H. Acid making in the sulphite pulp industry. Watertown, N.Y., G. D. Jenssen Co. Inc., c1949. Various paging.

TARIFF—UNITED STATES

U. S. TARIFF COMMISSION. Summaries of tariff information. Washington [U. S. Govt. Print. Off.] 1948. v. 14. Papers and books. 229 p.

THERMOCHEMISTRY

KELLEY, K. K. Contributions to the data on theoretical metallurgy. III. The free energies of vaporization and vapor pressures of inorganic substances. U. S. Bureau of Mines. Bulletin 383. Washington, U. S. Govt. Print. Off., 1935. 132 p.

KELLEY, K. K. Contributions to the data on theoretical metallurgy. X. High-temperature heat-content, heat-capacity, and entropy data for inorganic compounds. U. S. Bureau of Mines. Bulletin 476. Washington, U. S. Govt. Print. Off., 1949. 241 p.

TRADE DIRECTORIES

LOCKWOOD'S directory of the paper and allied trades. 75th ed., 1950. New York, Lockwood Trade Journal Co., Inc., c1949. 1460 p.

SOURCE of supply directory. Chicago, Howard Publ. Co., 1949. v. 24. 758 p.

WATER

VOM WASSER. Ein Jahrbuch für Wasserchemie und Wasserreinigungstechnik. Verantwortlich für den Textteil: Wilhelm Husmann. 16. Band 1943/44. Berlin, Verlag Chemie, 1944. 331 p.

WOOD WASTE

NORTHEASTERN WOOD UTILIZATION COUNCIL, *New Haven, Conn.* Wood waste utilization; report of field survey of manufacturing waste in New England, sponsored by Federal Reserve Bank of Boston. New Haven, The Council, 1949. 27 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ABRASIVE WEAR

MACDONALD, J. D., and KENNEY, J. W. Abrasiveness test for paper fillers. Tappi 32, no. 11: 516-19 (November, 1949).

A considerable amount of data is presented upon which recommendations for standard conditions and a procedure for abrasion-loss testing of fillers have been based. It is shown that wire type, slurry concentration, slurry pumping rate, length of test, rate of double strokes, wire-wear area, and block design influence the abrasion loss test. The necessity of standardizing these conditions seems evident, since agreement between different testing laboratories can be obtained through the use of an abrasion standard and adjustment of test conditions. 11 tables. E.S.

ADHESIVES

CALDWELL, C. G. Industrial adhesives. Chem. Inds. 65, no. 4: 554, 556 (October, 1949).

A review of the advances in industrial adhesives during the past year is presented, emphasizing new applications and techniques. Thermosetting adhesives, hot melts, emulsions, vegetable adhesives, and water-soluble synthetic polymers are briefly discussed. J.A.B.

LENZ, EARL C., and NEBIKER, ROBERT. Envelope seal; dextrines are products of science. Am. Paper Converter 23, no. 9: 18-19; no. 10: 10-11; no. 11: 14-15 (September-November, 1949).

A discussion is given of the improved tapioca-base dextrin gums recently developed by dextrin converters for use particularly in the envelope industry. These dextrins are made from Brazilian tapioca, which was substituted for Java tapioca during the war and was so improved that the product exceeded prewar standards of quality. Tapioca is used for this purpose in preference to other starches, because the resulting dextrin is clear, uniformly viscous over a period of time, gummier than other adhesives, soluble to the desired degree, free from objectionable odor or taste, and capable of producing a smooth, neat appearing film. The process of manufacturing tapioca front seal gums is described, with emphasis on the maintenance of careful control over such variables as the type of tapioca starch and the amount and type of acid and other chemicals used, the drying procedure, and the roasting temperature and time. In addition to solubility and viscosity, some of the qualities by which tapioca dextrins may be judged are: setback, pH, suction, tack, stick, penetration, drying time, sheen or gloss, film toughness, and film flexibility. A check chart for evaluating envelope seal gums is included. 8 illustrations. J.A.B.

MACDOUGALL, G. Discoloration of a tea bag. PATRA J. 12, no. 2: 30 (July, 1949).

A dark stain on the side of red parchment-paper tea bags was studied and found to have resulted from the sensitivity of the red dyestuff in the paper

to the slightly acidic starch adhesive used. Alkalies had no effect on the color and a starch adhesive containing borax was recommended. It is suggested that tests be made on the compatibility of colored paper with acid and alkali adhesives before they are used. R.R.

ADVERTISING

ANON. Corrugated coins cash. Am. Boxmaker 38, no. 11: 24-5 (November, 1949).

Reference is made to the recent trend of utilizing the liner sheets of corrugated shipping containers for printed advertising of the enclosed products. Several examples are given. 4 illustrations. E.S.

DAY, FREDERICK T. Packaging and display ideas in Belgium and Holland. Brit. Packer 11, no. 10: 34-5 (October, 1949).

A great deal of progress is being made in the field of packaging, advertising, packing methods, display, and design in Belgium and Holland. All types of products are appearing in attractive transparent viscose packages or fancy after-use containers, and elaborate window displays are protected from the sun by colored transparent blinds, situated inside the windows. Novel advertising techniques in the form of posters and traveling vans are used extensively to stimulate sales. 3 illustrations. J.A.B.

ALKALINE PROCESSES

WELLS, SIDNEY D. Progress in alkaline pulping in 1948. Southern Pulp Paper Manuf. 12, no. 10A: 44, 47-8, 50, 52, 54, 56 (Oct. 31, 1949); Tappi 32, no. 12: 36A, 38A, 40A, 42A, 44A, 46A, 48A, 50A (December, 1949); *cf.* B.I.P.C. 19: 225.

This is a continuation of the previous reports prepared at the request of the Alkaline Pulping Committee of TAPPI. The subject is reviewed under the following headings: expansion in the United States, expansion in Canada, other countries, consumption of chemicals, woods used, pulping procedures on various species, agricultural residues and grasses, cooking procedures and digester facilities, foam, tall oil and turpentine recovery, testing methods, recovery operation and equipment, and purification and bleaching. 335 references. J.A.B.

BARKERS AND BARKING

ANON. Spaulding installs new hydraulic barker. Paper Ind. 31, no. 8: 954 (November, 1949).

A brief description is given of a new hydraulic barker which will handle logs from 4 to 60 inches in diameter and 8 to 22 feet long; all operations are controlled electrically from a panel within a glass-enclosed cubicle. The entire unit was designed by Worthington Pump & Machinery Corp.; the loading, log-turning, and unloading mechanisms were built under subcontract by the Lamb-Grays Harbor Co., Hoquiam, Wash. 4 illustrations. E.S.

HALE, J. D., and MCINTOSH, D. C. Treatment of trees with toxic chemicals to facilitate removal of bark and to reduce weight. Sci. Monthly 69, no. 6: 408-11 (December, 1949); *cf.* B.I.P.C. 14: 389; 18: 817-18; 20: 5.

This is a brief resume of the work carried out by the Forest Products Laboratories of Canada, of which a detailed description has been given in the previous references. E.S.

BENTONITE

GRUNER, ERHARD. The most important results of colloid-chemical bentonite research in foreign literature during the years 1940-1947. Kolloid-Z. 114, no. 1: 49-54 (July, 1949). [In German]

The review is presented under the following subheadings: particle shape and particle size; constitution; dewatering, re-absorption, and swelling; sorption and base-exchange; properties of bentonite suspensions or gels, respectively; bentonite aerosol; and properties of bentonite films. 109 references. E.S.

BIOCHEMICAL TESTING

BORDEN, GEORGE C., JR., and WOODCOCK, IRENE. Reseeding B.O.D. bottles; a means of detecting toxic interference in the B.O.D. test. Tappi 32, no. 11: 506-14; discussion: 514-16 (November, 1949).

The effluent from paper mills may possess toxic properties. The B.O.D. test on such effluents will be distorted unless toxicity is recognized and corrected. The recognition of toxicity may be difficult for the average B.O.D. analyst by the means now usually employed. Data are presented showing that the reseeding of B.O.D. bottles will clearly point out any toxic interference in the test. A method for reseeding is given, which employs a system of duplicate bottles. Reseeding is demonstrated as it proceeded under two schedules. Safeguards to the equilibrium of the test are provided for in the technique. 7 tables, 11 figures, and 9 references. E.S.

ROGERS, D. PAUL. Technique of the biochemical oxygen demand determination. Tappi 32, no. 11: 481-6; discussion: 486-8 (November, 1949).

Irregularities in reporting biochemical oxygen demand (B.O.D.) results among analytical and research chemists have been recognized and an endeavor has been made to correct them. The method of making concentrations has been modified and the determination of the immediate oxygen demand (I.O.D.) has been eliminated entirely from the B.O.D. test. A new arbitrary factor has been added by which the results are determined from the values of the various concentrations by a simple calculation to a 50% oxygen depletion not only for normal wastes but also for wastes containing toxic materials. An optimum B.O.D. range for reliable oxygen depletions has been developed for toxic wastes. 3 tables, 5 figures, and 11 references. E.S.

BLEACHING

ANON. Brown's new La Tuque mill bleachery. Paper Trade J. 129, no. 19: 38-9 (Nov. 10, 1949).

A brief illustrated description of the new six-stage bleachery, the second unit, of the Brown Corp. at La Tuque, Que., is given, where Cellate (a brand of bleached kraft) is produced. The first bleachery for Solka pulps started operation in August, 1948. The combined capacity allows the company to bleach its entire digester capacity (about 450-500 tons per day), making La Tuque the largest bleached pulp mill in Canada. E.S.

BOARD—FINISH

PLEHN, P. C. The papermaker's viewpoint on finish. Tappi 32, no. 11: 68A, 70A, 72A (November, 1949).

The finish on paperboard is a complex property, which is the result of the co-ordination of many factors, some of which are readily controllable, whereas others require the constant vigilance of the boardmaker. The author illustrates the influence of the following variables on the resulting quality of the board finish: the type of fiber furnish, the stock-preparation equipment, chemical additions to the stock, the stock characteristics on the paper machine, the paper machine itself and its water-removal equipment, the size press, and the drying and calendering operations. E.S.

BOARD, CORRUGATED

CONTAINER CORPORATION OF AMERICA. Laminated corrugations in boxes. Fibre Containers 34, no. 10: 87-8 (October, 1949).

The company has developed a new corrugating medium, trade name Duo-Arch, which consists of a laminated corrugation in corrugated boxes. This lamination not only serves to provide a stiffer corrugating medium through the combined thickness of the two sheets, but also affords an opportunity to use a water-resistant type of adhesive in the lamination. This adhesive resists separation under moist and humid conditions and aids measurably in the retention of shape, cushioning power, and rigidity of corrugated board. The material is used where excessive crushing is experienced and replaces double-wall board in many instances; it approaches the latter in compressive strength, although it does not have its cushioning properties. Duo-Arch board has thus far been used successfully for packing butter, lard, washing machines, casket hardware, and rubber boots; it has also been found suitable for inner packing in the form of tubes, liners, or separators to provide stacking strength in boxes. 2 illustrations. E.S.

PERRY PROCESSES, *Cleveland*. New molded corrugated sheet. Fibre Containers 34, no. 10: 82-3 (October, 1949).

Reference is made to a new molded corrugated sheet, Peripac, made from waste paper on a new type of stock-forming machine. The waste paper is pulped in the conventional manner, using beaters or Hydrapulpers, and the sheet is formed on a mold equipped with grooves or indentations which conform to the corrugations on the molded sheet to be produced. The machine delivers the molded product directly to the air drier; following the drier is a slitter and rewinder which puts the sheets into the conventional roll form. The corrugations are of solid pulp and form an integral part of the backing. Although light in weight, the material is extremely tough and flexible. It lends itself to easy wrappings of irregularly shaped packages and provides maximum protection. The Sandy Hill Iron & Brass Works has been granted the exclusive manufacturing rights for the machinery; the material itself is available for either test purposes or manufacture under license. E.S.

BOARD MILLS

ANON. A new board mill; Springfield sets new standards. Pulp & Paper 23, no. 12: 42, 44, 46, 48, 50, 52, 54, 56 (November, 1949); *cf.* B.I.P.C. 19: 589.

The 150-ton/day kraft containerboard mill of the Weyerhaeuser Timber Co. at Springfield, Ore., has started operations. The raw material is waste from the company's own sawmill and other sawmills in the vicinity, small logs from the company's prelogging and relogging operations, and farmer logs; most of the wood is Douglas fir. An illustrated description of the installations is given, which include several unusual features, such as a Bergstrom tower for the removal of sulfur compounds from the effluent prior to its discharge into the sewer, a three-stage Impco washing system,

dry handling of the Cottrell ash, heating of process water with waste heat before treatment, and a novel continuous density-control system for the recovery-furnace dissolving tank. Extensive use is made of stainless steel throughout the plant. The pulp is cooked in three Blaw-Knox Co. digesters by the indirect process. The Rice-Barton Fourdrinier machine has a 164-inch by 103-foot wire. The central power station houses three Babcock & Wilcox boilers, with hog fuel and wood waste as the basic fuel. For emergency provisions, one of the boilers is designed to burn oil in addition to by-products of the sawmill. The electric generating plant consists of Westinghouse equipment. E.S.

ANON. New processes at Hartsville; Sonoco improvements. Pulp & Paper 23, no. 12: 61-2, 64, 67-8 (November, 1949); *cf.* B.I.P.C. 20: 161.

An illustrated description of the equipment in the new board mill of Sonoco Products Co., Hartsville, S.C., is given. The article is similar to the previous reference, but is not identical with it. E.S.

ANON. The story of Sonoco Products Company, Hartsville, South Carolina. Southern Pulp Paper Manuf. 12, no. 10A: 155-6, 158-63 (Oct. 31, 1949); *cf.* B.I.P.C. 20: 161.

Following a brief history of the company, its excellent labor relations program and general policies are described. Numerous illustrations. E.S.

WELEBER, A. F., and TUDOR, J. A. The electrical story. Pulp & Paper 23, no. 12: 56, 58 (November, 1949).

Power at the new Springfield board mill is generated by two turbo-generators; a radial system of power distribution with four outdoor substations has been selected. The types of motors driving the various installations are listed. The new Fourdrinier board machine is driven by a modern electrically controlled, multiple-generator sectional drive, designed to operate over a speed range of 200 to 1000 ft./min. The generation and distribution apparatus and over 85% of the motors were furnished by Westinghouse. 1 diagram and 5 illustrations. E.S.

CELLOPHANE

ANON. 5-pack cigarettes. Modern Packaging 23, no. 3: 78-9 (November, 1949).

A new paper-collared, cellophane-wrapped, half-carton package for cigarettes has been introduced by the P. Lorillard Co. The bottom is left exposed for application of the tax stamps by the jobber, and the cellophane is strip sealed to the five individual packs to hold them in place. 3 illustrations. J.A.B.

GARNATZ, GEORGE. Meat prepackagers battle problems. Food Inds. 21, no. 11: 1588-9, 1690, 1692, 1694 (November, 1949).

Some of the technical difficulties to overcome in prepackaging meats are odor, discoloration, formation of slime, microbial growth, and dehydration. The cellophane films M.S.A.T. 80 and L.S.A.T. were found to be satisfactory materials for this purpose, provided such factors as refrigeration and exposure to light are carefully controlled. Regardless of where prepackaging is done, in the retail store or in a centralized unit, color fading is the major technical problem. This is so serious that the prepackager is now turning

away from the completely transparent package, substituting a combination of opaque and transparent materials and guarding the food by keeping the opaque side to the light. Vacuum packaging is being investigated and the results appear to be favorable. J.A.B.

URBAIN, W. M., and RAMSBOTTOM, J. M. Controlling quality changes in cured meats by packaging. Food Research 13, no. 5: 432-9 (September-October, 1948).

Certain cured meats, such as sliced bacon or sliced dried beef, undergo changes with time which are short of those involving spoilage and which limit their life and affect consumer acceptance. The changes in question include loss of normal appearance as a result of discolorations, dehydration, or microbiological action, and flavor losses. Improved keeping quality can be secured through more rapid or better handling, formulation changes, or the use of protective packaging. Of these methods, packaging offers the greatest possibilities of advancement. Modern packaging materials offer a variety of properties, and studies of the nature of the deteriorative changes of the products in question will point to a proper selection of the correct packaging material. For example, the lean portions of cured meats owe their red color to nitric oxide derivatives of myoglobin, which undergo air oxidation accelerated by light. Cured meats, therefore, must be protected from light or oxygen, if the normal color is to be retained. Packaging materials which do either or both are available. The refrigerated display cases for self-service operation usually have a high level of illumination directed at the products they contain. Although fresh meats are little affected, certain cured meats can be faded extensively. Light may be excluded by the use of an opaque wrapper; vacuum packaging offers a simple solution for the exclusion of oxygen. However, the final choice of a packaging material must include, in addition to strictly technical aspects, a proper balance of cost factors, commercial requirements, and consumer acceptance. 2 figures, 3 tables, and 1 reference. E.S.

CELLULOSE

MEYER, KURT H., STUDER, M., and VAN DER WYK, A. J. A. Constitution of "pure" cellulose. Nature 164, no. 4175: 786-7 (Nov. 5, 1949).

The authors propose to term β-1,4-polyglucosan "pure" cellulose, having demonstrated that by far the greater part of cellulose fibers consist of this polysaccharide. The hypotheses of Haworth and Pacsu, suggesting the existence of cross linkages between pairs of chains, are discounted for lack of valid evidence, as is also the unfounded belief that carboxyl groups are present in each molecule of original cellulose. 4 references. J.A.B.

RÅNBY, BENGT G. Aqueous colloidal solutions of cellulose micelles. Acta Chem. Scand. 3, no. 6: 649-50 (1949). [In English]

The author in this brief communication reports that crystalline areas or micelles have now been obtained in aqueous colloidal solution and have been detected as isolated units by means of the electron microscope. After a hydrolytic degradation of wood or cotton cellulose by boiling with 2.5 *N* sulfuric acid for 1-8 hours, the sols are prepared by peptization, which begins around pH 3, with a maximum cellulose concentration (indicated by greatest opacity) occurring at about pH 4. After sterilization at 100° C. the sols are stable within a pH range of 3.5-9.5 for several weeks. It is stated that the stability probably results from the protective action of a substance of low molecular weight, possibly oxidized oligosaccharides. The sols are

definitely hydrophobic. They are coagulated by changes in pH beyond the range mentioned, by very small amounts of neutral electrolytes, by dialysis against distilled water, and slowly on dilution. The particles have a negative charge which is attributed to a rather high content of carboxyl groups (3-5 milliequivalents per 100 grams of cellulose). Other physical and chemical properties of the preparations are briefly discussed. A full account of the studies will be published elsewhere. 10 references. M.A.H.

CELLULOSE—HEAT OF WETTING

GUTHRIE, J. C. The integral and differential heats of sorption of water by cellulose. J. Textile Inst. 40, no. 8: T489-504 (August, 1949); *cf.* B.I.P.C. 19: 384-5.

This is an extension of previous work done by Rees, evaluating integral and differential heats of sorption by use of the direct or calorimetric method. Differential heats of sorption at zero moisture regain are approximately equal for all cellulosic fibers, the average value being 297 cal./g. of water absorbed. When integral heats of sorption are plotted against moisture regain on reduced co-ordinates, the values all fall near a single curve. These observations support the hypothesis that the average constitution of the water-absorbing regions of cellulosic material is the same for all. Differential heats of sorption plotted against relative humidity results in a single curve which is approximately correct. Samples of high-tenacity viscose rayon which had been stretched by different amounts showed a decrease in the value of integral heat of sorption with increasing percentage stretch, indicating a decrease in hygroscopicity with stretching. Additional references to the literature, which mainly concern the evaluation of thermodynamic functions, are given. 6 figures, 5 tables, and 27 references. J.A.B.

CELLULOSE—HYDROCELLULOSE

MEHTA, P. C., and PACSU, EUGENE. Cellulose studies. XII. The degree of polymolecularity of acid-modified celluloses. Textile Research J. 19, no. 11: 699-703 (November, 1949); *cf.* B.I.P.C. 20: 163.

For the determination of the degree of polymolecularity in acid-modified celluloses the nitrates of hydrocelluloses from native cotton, surgical cotton, and viscose rayon were fractionated from dilute acetone solutions. The results indicate that a large proportion of the hydrocelluloses are uniform in that almost 33% of the methanolyzed native cotton consists of molecules with D.P. 252, about 70% of the hydrocellulose from surgical cotton has D.P. 260, and some 36% of the material from viscose rayon has D.P. 62. Moreover, the most important fractions were found to be integral multiples of the assumed "limit hydrocellulose" with D.P. 64. Integral- and mass-distribution curves were constructed from the experimental data according to the procedure outlined by Schulz and were compared with the theoretical mass-distribution curves calculated on the basic assumption of random hydrolysis of a long-chain molecule with uniform hydrolyzable bonds. In all three cases the experimental curves show pronounced peaks, which can be readily interpreted only on the basis of the new concept of cellulose structure. 6 tables, 3 diagrams, and 7 references. E.S.

CELLULOSE—SORPTION

JÄGER, A. Theoretical consideration of the absorption of sodium hydroxide by cellulose. Kunstseide u. Zellwolle 26, no. 5: 86-91 (May, 1948). [In German]

Cellulose-caustic relationships are considered with particular regard to their technical application in the viscose rayon industry. It has been generally decided that the taking up of sodium hydroxide by cellulose involves a chemical combination rather than a simple absorption; this assumption has been confirmed by x-ray diagrams. The author discusses various experimental procedures which have been used to investigate the molar relationships involved in the compound formation. The well-known method of Vieweg, whereby the concentration of the caustic soda solution is measured before and after steeping the cellulose in it, gives low values (about one half) because no allowance is made for the absorption of water by the alkali cellulose. The method of Schwarzkopf (*cf.* Z. Elektrochem. 38: 358 [1932]), in which sodium chloride is added to the caustic solution so that the absorption of water by the cellulose may also be calculated from the change in the salt concentration, is considered to give a truer value for the caustic absorption. With a steeping liquor concentration of 14-23% sodium hydroxide, a molar ratio of sodium hydroxide to cellulose of 1:1 is found; 5 to 6 moles of chemically bound or nondissolving water are associated with this sodium cellulose molecular unit. The centrifuging method of Coward and Spencer (*cf.* J. Textile Inst. 14: T28-45 [1923]), on the other hand, is judged to be inapplicable. In the alkali cellulose as prepared for viscose rayon manufacture a cellulose-alkali-water system is formed, in which not only chemically combined but additional physically absorbed alkali and water play a part in the xanthate formation. The apppearance of alkali cellulose I, which occurs with steeping caustic concentrations of 12-17% sodium hydroxide and at ordinary temperatures and operating conditions, is not in itself sufficient to produce a fiber-free, soluble xanthate. About 2 moles of sodium hydroxide and 12 moles of water per glucose anhydride unit seem to represent the lower limit for obtaining good xanthation. 8 tables and 9 references. M.A.H.

CELLULOSE ESTERS

HAYES, F. N., and LIN, CHAO-HAN. Acetyldesoxycellulose quaternary salts. J. Am. Chem. Soc. 71, no. 11: 3843 (November, 1949).

The percentage of primary free hydroxyl in cellulose acetate was estimated by tosylation and subsequent conversion to quaternary salts by heating separate portions of the tosylate with pyridine, 3-picoline, and isoquinoline. An accompanying table gives analytical data and the calculated values of free hydroxyls, unreacted tosylate ester groups, and quarternary salt groups per glucose unit for each of the three products. 1 table and 4 references. J.A.B.

CELLULOSE FILMS, TRANSPARENT

MINNESOTA MINING AND MANUFACTURING COMPANY. Banding tape for boxes. Fibre Containers 34, no. 10: 108-9 (October, 1949).

Reference is made to a new type of pressure-sensitive tape used as banding agent for heavy-duty packaging. It comes in 72-yard rolls, from one-half to three inches in width. It is composed of a transparent acetate backing reinforced with high-strength rayon fibers and coated with either a transparent or colored adhesive. In addition to banding and reinforcing paperboard containers, the new tape is also used for some palletizing operations, for packaging plastic sheets, tubing, and rods, and for shipping miscellaneous assemblies. E.S.

CHEMICAL TESTING—TALL OIL

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY.

Analysis of tall-oil skimmings. Tappi 32, no. 11: 98-100A (November, 1949).

This is the text of TAPPI Tentative standard T 635 m-49 and deals with the determination of those components in tall oil skimmings which are considered of chief interest to skimmings producers and consumers. The tests include determinations of apparent density, total solids, yield of tall oil, and saponification number of the tall oil. From the results of these tests, the composition of skimmings in terms of water, tall oil soap, and other black-liquor solids can be calculated. 1 figure. E.S.

CHEMICALS

LANDES, C. G. Pulp and paper chemicals. Chem. Inds. 65, no. 4: 556, 558 (October, 1949).

This is a brief review of the advances in pulp and paper chemicals during 1949. The chemicals discussed are divided into the following groups: pulping and bleaching, sizing, synthetic resins, specialties, and coating. Several new chemicals are mentioned, in addition to improvements in quality, methods of handling, and application. J.A.B.

MOREHOUSE, WALTER B. Modifying paper characteristics through chemical additives. Paper Trade J. 129, no. 21: 26-9 (Nov. 24, 1949).

This is a general discussion of the materials which, when added to or incorporated into paper, change its physical characteristics. Materials used as waterproofing agents, such as rosin size, wax emulsions, and sodium stearate size, which is generally used in the manufacture of photographic printing paper, are mentioned and their desirable qualities considered. For producing unique effects using cellulose fiber as a basic constituent in the development of paper laminates, a polystyrene resin emulsion is suggested, and the physical characteristics of the resulting product are tabulated. A procedure for imparting greater absorbency and rewetting ability to an unbleached groundwood sheet with wetting agents is described; similar treatment of bleached groundwood produced erratic effects. 3 tables. J.A.B.

SHALLCROSS, RUTH E. Supply-demand data on the chief nonfibrous raw materials used in the pulp and paper industry. I. Chemicals used in the manufacture of pulp. Tappi 32, no. 11: 14A, 16A, 18A, 20A, 22A, 24A, 26A, 28A, 30A, 32A (November, 1949); Paper Mill News 72, no. 51: 31-4, 36, 38-40, 44 (Dec. 17, 1949); *cf.* B.I.P.C. 19: 467.

This is an extension and revision of the article by Shallcross and Wells which appeared in the *Paper Industry and Paper World*. 13 tables, 4 figures, and 48 references. E.S.

CHLORINE

HULME, R. E. Thermodynamic properties of superheated chlorine. Chem. Eng. 56, no. 11: 118-19, 127 (November, 1949); *cf.* B.I.P.C. 19: 388.

In the previous reference, tables and graphs on several thermodynamic functions of chlorine are given, covering the saturated region and omitting entropy values. The present article gives data on both the superheat region and entropy. The superheat tables cover ranges of 10 to 400 p.s.i.a. and —44

to 400° F., which ranges should cover most of the region normally encountered in practice. The data are considered sufficiently accurate for most engineering calculations. 2 tables and 6 references. E.S.

CHROMATOGRAPHY

DATTA, S. P., OVERELL, B. G., and STACK-DUNNE, M. Chromatography on alumina-impregnated filter paper. Nature 164, no. 4172: 673-4 (Oct. 15, 1949).

Investigating the use of alumina-impregnated filter paper in simple organic solvents, the authors found that it forms, in effect, an adsorption chromatogram on a micro scale and combines the advantages of alumina chromatography with the refinements of paper chromatography. The possibilities of extending these methods to large water-insoluble organic molecules are emphasized. The methods of impregnation, drying, and storage are described and the effects of variations discussed. 3 references. J.A.B.

MITCHELL, HERSCHEL K., and HASKINS, FRANCIS A. A filter paper "chromatopile." Science 110, no. 2855: 278-9 (Sept. 16, 1949).

A new technique has been developed for the separation of small amounts of many kinds of compounds, using a pile of filter paper disks as the absorbing column. In a trial run on known compounds, it was found that the solvent front movement was extremely uniform, with only a slight difference in rate at the edges. This method is superior to those using starch columns or one- and two-dimensional chromatography. 2 figures and 6 references. J.A.B.

COAL

APPALACHIAN COALS, INC. The paper industry—a stable and growing coal market. Tappi 32, no. 11: 32A (November, 1949).

Statistical data on the growth of the paper and board industries are given. Under the generally accepted formula of one ton of coal to one ton of paper, and with over 80% of the mills using coal as the source of their energy, the paper industry provides a substantial and stable coal market. E.S.

CONTAINER INDUSTRY—LAWS AND LEGISLATION

PARKER, LEO T. Infringement of trade-marks, trade names, and copyrights. Fibre Containers 34, no. 10: 96, 98, 100 (October, 1949).

Recent important higher-court decisions are reviewed, which illustrate the vast legal differences between copyrights, trade-marks, and trade names, and the advantages and disadvantages of each. E.S.

CORROSION

CAM, R. H. BOYCE. Preservation of metallic parts for export packing: a review of methods and materials. Brit. Packer 11, no. 9: 55-6 (September, 1949).

Following a brief summary of early methods of protecting metallic parts against corrosion during shipment, consideration is given to the plastic hot-dip, plastic spray, plastic cold-dip, and cocoon processes, enclosure in plastic film bags, and the use of inhibitors with wrapping materials. The last-named and most recent method utilizes sodium benzoate or vapor-phase inhibitors, such as Shell V.P.I. 260, with wraps. 13 references. R.R.

DOUGHERTY, JOSEPH C. Sweat damage to intercoastal canned goods. Fibre Containers 34, no. 10: 74-5 (October, 1949).

The author discusses the principles involved in sweat damage and rust in cargo shipments of canned goods by following the moisture conditions prevailing in a ship from northeastern ports in winter through the Canal Zone and up the West Coast. Sweat is condensation of airborne moisture deposited on a vessel's cargo (commodity sweat) or the vessel's interior (ship's sweat). The ship's personnel is responsible for the proper ventilation control of cargo holds during a voyage; steamship operators are undertaking a program of education in the proper use of instruments, so that the personnel may learn to interpret the readings correctly. The shipper can limit sweat damage possibilities by avoiding hygroscopic glues for labels, keeping his canned goods in temperature-controlled warehouses during the winter in cold climates, and moving his goods to the docks as close to ship-loading time as possible to avoid chilling of the cans. Cans with temperatures higher than the dew point of the surrounding air will not produce commodity sweat. E.S.

SERGEANT, S. V. Combating corrosion by electrical means. Indian Pulp and Paper 4, no. 2: 87-9 (August, 1949).

The process of overcoming corrosion electrically by cathodic protection consists of passing a current between an anode of some suitable material and the metal to be protected, which forms the cathode; corrosion of the cathode is thus prevented or reduced at the expense of the anode. The current may be supplied through galvanic action between the two electrodes, from a direct-current generator, or from alternating current after rectification. Factors which assist or hinder corrosion control include the effects of continued electrolysis, which finally causes disintegration; electro-osmosis, giving rise to loss of moisture at the anode and increased resistance; and shielding, resulting from the conductor being so placed that it acts as a cathode instead of the metal protected. Various uses for this method and possible types of anodes are discussed. 1 diagram. J.A.B.

DYES AND DYEING

MARSDEN, K. E. The use of dyestuffs in the making of coloured papers. Paper Making and Paper Selling 68, no. 2: v-vii (1949).

Paper may be dyed in the beater, prior to manufacture, or in the sheet state after manufacture. The dyestuffs used for this purpose are divided into five chemical classes: (1) basic, (2) acid, (3) direct cotton, (4) sulfur, and (5) vat, each type having different characteristics and methods of application. Because of the vegetable character of paper and its cellulose basis, direct cotton dyes possess the greatest utility in paper dyeing. J.A.B.

ELECTRIC PRECIPITATORS

SCHMIDT, WALTER A. Electrical precipitation and mechanical dust collection. Ind. Eng. Chem. 41, no. 11: 2428-34 (November, 1949).

After reviewing some of the fundamentals of the Cottrell electrical precipitation process, such as the meaning of the precipitation constant, the effect of acid and basic conditioning, the occurrence of "back discharge," and the significance of dust resistivity, the author discusses the dependence of resistivity upon temperature, humidity, and chemical composition. Following this, the importance of good gas distribution in the precipitator is

emphasized, and by gas flow diagrams it is shown that proper distribution may be obtained by carefully chosen corrective devices. Next, the rating of centrifugal dust collectors is considered, and their tendency to collect particles selectively depending upon size is discussed. After describing recent trends in the theory and construction of centrifugal collectors, it is concluded that present theories are adequate for a general understanding of the centrifugal collection process, but that many details of the design still are evolved empirically. 2 tables, 12 figures, and 19 references. E.S.

FERMENTATION PROCESS

PORPHYRE, J.-A. The paper industry and the textile industry. Papeterie 71, no. 10: 383, 385, 387, 389 (October, 1949). [In French]

The author suggests that certain techniques, like retting, could find applications in the paper as well as in the textile industry. The utilization of Rossi's bacillus *Granulobacter pectinovorum*, which destroys incrusting matter without attacking cellulose, is recommended. L.E.W.

FIBER—DIMENSIONS

BERGMAN, STUART I. Lengths of hardwood fibers and vessel segments; a statistical analysis of forty-nine hardwoods indigenous to the United States. Tappi 32, no. 11: 494-8 (November, 1949).

The variations exhibited by fibrous elements of both hard- and softwoods are discussed. Statistical constants for each of the samples studied as well as segregation of kinds of woods into length classes for fibers and vessel segments are presented. The difference between the means for fiber and vessel-segment lengths of two samples from like kinds of wood may be greater than the corresponding difference for two samples from unlike kinds of wood. No unique mean and standard deviation for fiber and vessel-segment lengths for a particular kind of wood can be correctly presented without a critical analysis of variance based on an extensive sampling. A high degree of positive correlation between the lengths of fibers and those of the vessel segments exists. 3 tables, 1 figure, and 12 references. E.S.

FOLDING BOXES

ANON. Convenience devices. Modern Packaging 23, no. 3: 73-7, 168, 170, 172 (November, 1949).

The trend toward equipping all types of packages and cartons with convenient opening, dispensing, and reclosing features is pointed out and illustrated with specific examples. The particular devices used for various products depend upon the quantity used at one time and the kind of protection required, in addition to the necessary economic considerations. Numerous illustrations. J.A.B.

ANON. Electric bulbs dropped from plane. Brit. Packer 11, no. 10: 44 (October, 1949); World's Paper Trade Rev. 132, no. 17: Suppl. 3 (Oct. 27, 1949); Paper Box Bag Maker: 150 (October, 1949).

A shockproof carton for electric light bulbs, designed by Harry Bradley, has been introduced by John Waddington Ltd. Sixty-four filled cartons were dropped from a plane 2500 feet in the air, with only one being damaged. The carton is constructed of thin cardboard; the bulb is pushed in at one

end and interlocking flaps meet around the neck to hold it firmly in the center. The top of the bulb rests against four tiny shock absorbers, leaving the wattage and voltage exposed to view. The bulbs can also be tested without removing them from the carton. 1 illustration. J.A.B.

ANON. New "cell carton" sells apples. Am. Boxmaker 38, no. 11: 15-16 (November, 1949); Shears 67, no. 683: 40 (November, 1949).

The divided-cell, air-flow construction principle of the egg carton has been applied to packages for apples, with a phenomenal increase in sales for the Sebastopol Apple Growers Union of California. The Stan-X-Cell carton, made by the Standard Paper Box Co., Los Angeles, comes in two sizes, holding 6 and 8 apples each; die-cut windows in the top make each apple visible. 4 illustrations. J.A.B.

ANON. Smith Brothers cough drops. Modern Packaging 23, no. 3: 94-9, 164 (November, 1949).

Unique in the field of packaging is the Smith Brothers cough drop box, which has been unaffected by modern trends and is essentially the same as it was when the company began over 100 years ago. A waxed-paper inner liner and transparent cellophane overwrap have been added for protection against moisture, and manufacturing, filling, and distributing techniques have been modernized considerably, but the two bearded gentlemen on the front of the box (the original Smith brothers) continue to provide the perfect trademark protection. 12 illustrations. J.A.B.

FORESTS AND FORESTRY

ANON. Gaylord's pioneering reforestation project. Fibre Containers 34, no. 10: 22, 24, 29-30, 32, 34 (October, 1949).

The history of the reforestation project at Bogalusa is recorded, which involves a hand-planted pine forest of about 57,000 acres. The project was started as early as 1920 by the Great Southern Lumber Co. for the benefit of the Bogalusa Paper Co., a Gaylord predecessor. In the beginning there was no pattern for such a reforestation project and the company's growing plantations served as a pilot plant for the development of modern forestry techniques, many of which are now accepted as basic principles of good forestry. Instead of becoming just another ghost town following in the wake of the woodman's axe, Bogalusa is now a thriving community of 17,000 people with an assured future based upon extensive forests where wood is farmed as a crop. 24 illustrations. E.S.

DAY, C. W. R. Swamp drainage. Pulp Paper Mag. Can. 50, no. 11: 138 (October, 1949).

Reference is made to a drainage experiment of wet forest areas in the Northern Clay Belt of Ontario to determine possible improvements in poor merchantable stands of black spruce. The experiment was begun in 1929 and the remeasurement of the area in ten-year intervals was planned. No remeasurement was carried out in 1940, but occasional examinations showed the ditches and plots to be in good shape; the trees along the ditch lines have increased their rate of growth materially, whereas those growing only a relatively short distance from the ditches are continuing to grow very slowly. A thorough remeasurement in 1950 should bring tangible results. E.S.

LARSSON, O. G. Nurseries and plantations. Pulp Paper Mag. Can. 50, no. 11: 160, 162-3 (October, 1949).

In 1919 the Abitibi Power & Paper Co. Ltd. at Iroquois Falls started an experiment with a forest nursery within the Clay Belt region of Northern Ontario. Although both the nursery and outplanting projects were unsuccessful, valuable data and experience were accumulated which would prevent the pitfalls responsible for the failure of the first undertaking, if work along similar lines should be started in the future. E.S.

NAYSMITH, D. A study of natural restocking of the cut over and burned over lands on the limits of the Manitoba Paper Co. Limited. Pulp Paper Mag. Can. 50, no. 11: 134, 136 (October, 1949).

The results of annual regeneration surveys are given which, it is hoped, in conjunction with permanent sample plots and silvicultural experiments, will point out the proper course to be taken to ensure prompt and satisfactory restocking of the company's lands. The data apply only to the present studies and need not necessarily hold for other regions. The mixed-wood types show a failure to restock, except to poplar, after fire or logging. Restocking in cut-over black spruce-jack pine areas is fairly to fully successful; in burned-over areas, the jack pine species will predominate. Pure black spruce stands fail to restock after burning. When fire follows even a partial cut in softwood stands, the stocking to the softwood species fails. E.S.

W. H. S. Life and death in the forest. Ind. Eng. Chem. 41, no. 11: 7A, 10A (November, 1949).

Brief reference is made to certain chemical and biological developments in forestry, such as the killing of weed trees by treatment with Ammate (trade name of ammonium sulfamate), the stimulation of gum flow by treatment of the wounds with dilute sulfuric acid or a species of *Fusarium* fungus (U. S. patent 2,436,359, granted to G. H. Hepting on Feb. 17, 1948; *cf.* B.I.P.C. 20: 266), and the use of hormones as root stimulants and growth regulators. E.S.

FUEL

BROWN, DELMAR L. Handy charts simplify wood-fuel combustion checks. Power 93, no. 11: 112-14 (November, 1949).

In a set of nine charts, the author has assembled in convenient form information on the properties of wood waste as a fuel, covering moisture content, flue gas, and heat losses (efficiency). The charts are based on typical Douglas-fir wood wastes as used in the Pacific Northwest. With exceptions noted, they serve for rough calculations where other types of wood and vegetable fuels are burned. For accurate work, similar data can be plotted by substituting the properties of the selected fuel. E.S.

FUNGI

GADD, G. O. Fungal damages in groundwood pulp. Pulp Paper Mag. Can. 50, no. 11: 98-9 (October, 1949).

Supplementing the article by Crossley (*cf.* B.I.P.C. 19: 625), the author discusses the species of yeasts, molds, and rot fungi which have been isolated from wet groundwood pulp in the Central Laboratory, Finland, and the extent of damage which they produce; the rot fungi are considered the

chief offenders. The decomposition of groundwood pulp is a comparatively slow process. Storage damages have been found to be directly proportional to the storage period, provided the temperature remains constant. Since it is impossible to produce sterile pulp, fungal growth will occur, when conditions are favorable. Investigations in the Central Laboratory have shown that fungal decay does not occur in 75% airdry pulp (*cf.* B.I.P.C. 19: 88); groundwood pulp can also be protected by chemical treatment (*cf.* B.I.P.C. 19: 584-5). Finland, as an important groundwood-pulp exporter, is naturally interested in these investigations; the studies are being continued. 9 references. E.S.

INSECTS AND VERMIN

COTTON, RICHARD T., FRANKENFELD, JUSTUS C., and STRICKLAND, WINSTON B. Insect-repellent cotton bags. Modern Packaging 23, no. 3: 126-7 (November, 1949); *cf.* B.I.P.C. 20: 174-5.

Reference is made to experiments with cotton bags treated with various mixtures of pyrethrins with piperonyl butoxide or piperonyl cyclohexanone in different concentrations for protection against insect infestation. The results show that bags treated with extremely light dosages will protect flour packed therein for at least seven months. The chemicals are of a comparatively low order of toxicity to warm-blooded animals, and it seems unlikely that, at the rate and methods of application used in these experiments, they will contaminate products packed in treated bags. However, further work is needed to determine this question as well as the minimum effective dosages. Treated cloth is not materially changed in appearance. Pyrethrins give it a slight, though not objectionable odor. At present prices, the cost of the treatment is sufficiently low to make commercial application practicable. Mention is made of the fact that paper bags treated in the same manner will also give efficient protection. E.S.

INSTRUMENTATION

BRISTOL COMPANY, *Watertown, Conn.* Control of stock washers. Paper Mill News 72, no. 43: 55 (Oct. 22, 1949).

Complete, modern instrument measurement and control of continuous pulp-washing systems are important to provide more uniform operation, cleaner pulp with a lower soda loss, more uniform liquor strength, and better records for production accounting. The important instruments which make up such a control and their purposes are briefly mentioned. In conclusion, consideration is given to the company's new Series 500 air-operated controllers, autoset controller, Pyrovisor radiation unit, viscosity recorder, and absolute pressure gage, which have been designed for diversified applications throughout the industry. R.R.

MURPHY, E. A. Measurement and control of paper machine variables. Paper Mill News 72, no. 43: 34-6, 39-40 (Oct. 22, 1949).

The author discusses the continuous measurement of the headbox level; white water-temperature control as an aid to Fourdrinier drainage; typical wet-end instruments to measure the pH of white water going to the regulating box, vacuum on the suction-box header and on the suction couch roll, and the level in the white-water chest; systems of instrumentation employed on drier sections; and the measurement of sheet moisture as a final check on paper-machine operation. Schematic drawings of various applications are included. R.R.

SHONKWILER, F. L. Instrumentation and control of paper drying equipment. Pulp Paper Mag. Can. 50, no. 11: 94-7 (October, 1949).

The author discusses the important factors in the efficient operation of felt driers, control arrangements for pneumatic loading devices, and the factors affecting drier efficiency, particularly the need for condensate and air removal. 8 diagrams. E.S.

YUNKER, W. S. New instrumentation in the pulp and paper industry. Paper Mill News 72, no. 43: 30-2 (Oct. 22, 1949).

Mention is made of various new instruments developed by The Foxboro Co., among which are the pneumatic Model 40 Controller, the Dynalog, and the d/p cell transmitter. Eleven illustrations are given of installations of Foxboro industrial instrumentation. R.R.

INSULATION AND INSULATING MATERIALS

LINDSAY, F. H. Insulating Eastern Corporation's steam plant. Paper Mill News 72, no. 47: 84-6 (Nov. 19, 1949).

The insulation of the equipment in the steam-electric plant of the Eastern Corp., South Brewer, Maine, is described. Insulation materials employed are 85% magnesia and diatomaceous silica. Insulation thicknesses were chosen on the basis of engineering studies and are tabulated for various pipe sizes and equipment. The application methods for different surfaces and installations are outlined briefly. 2 tables and 5 illustrations. E.S.

INSURANCE

WRIGHT, W. G. Values and losses of standing timber in forest fire insurance. Pulp Paper Mag. Can. 50, no. 11: 156, 158-9 (October, 1949).

The author discusses the principles to be considered by the limitholder in estimating the values and losses when insuring his standing timber against forest fires. The conditions must be estimated for each tract of timber separately and they may even vary from year to year. An illustration for one set of conditions is given. E.S.

LEGIBILITY

GRAY, ALBERT W. How color combinations affect legibility. Am. Printer 129, no. 5: 36-7 (November, 1949).

The legibility of printing involves two factors, color and brightness, and each plays an almost identical role. It is not one color alone by which a greater legibility is attained, but a combination of two colors, that of the ink used in the printing against the colored background of the paper; the greater the brightness difference between symbol and background, the greater the legibility of the print. According to a series of studies made at the University of Minnesota, the greatest legibility at a distance was gained from the use of blue ink on white paper, followed by black on yellow, green on white, with the orthodox black on white ranking fourth. Red on green had the lowest legibility. Tests on the effect of two-color combinations on reading speed gave different results. Here, black on white ranked first, followed by green on white, blue on white, and black on yellow; red printing on a green background gave the lowest in legibility. The combinations of printing ink and paper ranking highest in distance and rapid reading legibility were found to be blue on white, blue on yellow, green on white, and black on

white; the least effective color combinations were orange on black and white, red on green, and black on purple. The legibility rankings according to the University of Minnesota and Luckiesh do not agree in the first six rankings, although both list green on red and red on green at the bottom. 2 tables. E.S.

LIGNIN

MARKHAM, AARON E., PENISTON, QUINTIN P., and MCCARTHY, JOSEPH L. Lignin. III. Fractional precipitation of barium lignin sulfonates from water by ethanol. J. Am. Chem. Soc. 71, no. 11: 3599-601 (November, 1949); *cf.* B.I.P.C. 18: 678.

A lignosulfonate preparation purified by dialysis has been precipitated as a barium salt from its aqueous solution by ethanol to yield a number of fractions which have been characterized by chemical analyses, ultraviolet extinction coefficients, and diffusion coefficients. When results of the chemical analyses are calculated on an anhydrous, sulfur-free, ash-free basis, the fractions are found to be of nearly uniform composition. Diffusion coefficients of the several fractions are found to increase progressively in order of precipitation and indicate a corresponding decrease in molecular weights over a wide range. The uniformity of the chemical composition and of the ultraviolet absorption spectrum and the regular trend in diffusion coefficients indicate the polymeric character of lignosulfonic acids. 2 tables and 14 footnotes. E.S.

MEREWETHER, J. W. T. Studies on the lignin of *Eucalyptus regnans*. III. The isolation of an alkali lignin from sulphate pulping. Australian J. Sci. Research 2 A, no. 1: 117-26 (March, 1949); *cf.* B.I.P.C. 19: 323-4.

An alkali lignin containing no sulfur has been obtained as a by-product from the sulfate pulping of *Eucalyptus regnans*. Like other alkali lignins it contains hydroxyl groups, both acidic and alcoholic, as well as methoxyl groups. Acetic anhydride in pyridine yields an octoacetyl derivative which is readily hydrolyzed by boiling water to a heptacetyl derivative. In pyridine, benzoyl chloride yields an octobenzoyl derivative whereas in aqueous alkali it yields a hexabenzoyl compound. Dimethyl sulfate yields a heptamethyl alkali lignin, diazomethane, a hexamethyl derivative, whereas cold alkaline hydrolysis of the latter gives a pentamethyl derivative, and hot alkaline hydrolysis yields an anhydrotrimethyl alkali lignin. One of the methoxyl groups formed by methylation is unstable to acetylation by acetic anhydride in pyridine, heptamethyl alkali lignin yielding a hexamethyldiacetyl derivative, hexamethyl alkali lignin a pentamethyltriacetyl derivative, pentamethyl alkali lignin a tetramethyletraacetyl derivative, and anhydrotrimethyl alkali lignin the corresponding anhydrodimethyltetraacetyl alkali lignin. Triphenylchloromethane in pyridine yields a monotrityl derivative. *p*-Nitrophenylhydrazine gives a di-*p*-nitrophenylhydrazone and phenylhydrazine a phenylhydrazone osazone. Potentiometric titration shows two points of inflection and an equivalent weight of 863. The data are consistent with the empirical formula $C_{92}H_{104}O_{34}$ (1754). 1 table and 9 references. E.S.

MACHINERY

CHEMICAL INDUSTRIES. New process equipment provides new economies. Chem. Inds. 65, no. 4: 512-33 (October, 1949).

This is a collection of articles concerning new equipment announced during the past year, with such information as sizes, materials of construction,

distinguishing features, applications and limitations, and the manufacturing company. Each article covers a different type of equipment, and the authors and titles are as follows: Boyle, Robert L. Materials handling, p. 513-15; Hufnagel, John A. Distillation, absorption and extraction, p. 515-16; Miller, Shelby A. Filtration, p. 516-17; Lyons, E. J. Mixing, p. 517-18; Kohlins, W. D. Evaporation, p. 518-19; Smith, Julian C. Centrifuges, p. 519-20; Redniss, Alexander. Drying, p. 520-1; Murphy, J. J. Dust collectors, p. 521-2; Skelly, Joseph F. Pumps, compressors and expanders, p. 522-3; Otten, P. S. Heat exchange, p. 523-4; McArdle, Meade. Pipe and fittings, p. 524-6; Caldwell, H. B. Crystallization, p. 526-7; Berg, Clyde. Adsorption, p. 527; Hoffman, J. J. Safety, p. 527-8; Kanowitz, S. B. Grinders, p. 528-9; Anon. Auxiliaries, p. 529; Anable, A. Classification and sedimentation, p. 529-30; Cermack, R. W. Instrumentation and process control, p. 530-3. J.A.B.

NEESE, E. H., JR. Machine modernization. Paper Mill News 72, no. 47: 62, 96 (Nov. 19, 1949).

The author refers to improvements in Fourdrinier and cylinder machines made possible by Beloit Iron Works equipment, including suction box oscillation, suction rolls, driers, open-stack calenders, high-speed winders, new gear-drive units, etc. 4 illustrations. E.S.

SCHØPP, PETER L. Technical developments in the groundwood industry. Norsk Skogind. 3, no. 10: 248-54 (October, 1949). [In Norwegian; English summary]

Recent technical developments in the woodroom are reviewed, including a submerged stream apparatus built by Sund-Skönviks Verkstäder for propelling logs in stagnant water or under adverse flow and wind conditions in log ponds to the haul-up; the ring-type hydro barker (*cf.* B.I.P.C. 16: 537); the wood splitter Magni, a Norwegian machine; the development of ring grinders (*cf.* B.I.P.C. 17: 351-2); improvements in the Voith magazine grinder; a new method of mounting pulpstones developed by W. Waal; a manometer-controlled burr developed by W. Brecht and I. M. Voith; instrumentation in groundwood mills (*cf.* B.I.P.C. 19: 164-5); the Cowan screen (*cf.* B.I.P.C. 18: 99); a sliver detector for centrifugal pulp screens; a new screen by Sund-Skönviks Verkstäder; and the Oliver-Denhard discharger for vacuum thickeners. 17 figures. E.S.

MACHINERY—BOARD MACHINES

MCARN, T. A., and SMITH, L. E. Building versatility into a Fourdrinier. Fibre Containers 34, no. 10: 64, 66 (October, 1949); Paper Trade J. 129, no. 18: 35-7 (Nov. 3, 1949); *cf.* B.I.P.C. 19: 244-5.

The unusual features which were included in the Fourdrinier machine recently installed at the Sonoco Products Co., Hartsville, S.C., are described. The machine is designed for the manufacture of .009 corrugating board. E.S.

MACHINERY—CONSISTENCY REGULATORS

BERMAN, NORMAN R. New equipment increases paper mill production. Paper Mill News 72, no. 43: 60, 62 (Oct. 22, 1949).

The installation of an Askania screening and thin stock-consistency control system at the Flambeau Paper Division (Park Falls, Wis.) of the Kansas City Star Co. has resulted in a 20% increase in production and eliminated

one man per shift. The sensing unit, regulating unit, and control unit are described and a flow chart of the Flambeau installation is given. R.R.

MACHINERY—CONVERTING MACHINERY

PARSONS, BASIL M. Make-ready for cutting and creasing on platen presses. Shears 67, no. 683: 14-15, 64-5 (November, 1949).

With a brief historical note, a discussion is given of platen presses for cutting and creasing in a single operation with steel rule dies. The general make-ready procedure, the preparation of spot-up sheets, and the proper method of nicking rules are described. A preliminary determination of the capacity of a platen press in tonnage should be made, preferably by the press manufacturer, in order to prevent overloading. 1 illustration.
J.A.B.

MACHINERY—DRYERS

ANON. Dryer roll design studied by insurance engineers. Pulp Paper Mag. Can. 50, no. 11: 89 (October, 1949).

Brief reference is made to a program of stress determinations in paper-machine driers instituted by the Mutual Boiler Insurance Co. of Boston. In this project the company used bonded resistance wire strain gages on operating rolls in areas in which previous failures had occurred. The data collected in these tests either indicated where design modifications should be made or when operating practice should be changed; they showed that many failures result from improper handling of driers. Analyses of recent failures also indicated that, although design could be improved, operating faults might still lead to failures, perhaps beyond the reasonable control of the foundry or designer. E.S.

MACHINERY—ELECTRIC EQUIPMENT

RELIANCE ELECTRIC & ENGINEERING COMPANY. Reliance developments for paper process control. Paper Trade J. 129, no. 18: 38-9 (Nov. 3, 1949).

A brief description of two control devices is given, the VSS short-stroke dancer roll for constant-tension control of loops of material in process, and the VSC electronic excitation control system for paper-machine drives. 2 figures. E.S.

MACHINERY—JORDANS

PREVOST, BRUNO E. Jordan plug pressure control system. Paper Mill News 72, no. 43: 43-4, 46 (Oct. 22, 1949); Fibre Containers 34, no. 10: 68-73 (October, 1949); Can. Pulp Paper Ind. 2, no. 12: 14-16, 30 (December, 1949).

A summary of the development and a description are given of the automatic jordan plug pressure control system of the Emerson Manufacturing Co., Lawrence, Mass. The safety features, operation, and advantages of the system are outlined. 2 figures. R.R.

MACHINERY—MOISTENING DEVICES

ANON. Orion fogging and damping machine. Pulp Paper Mag. Can. 50, no. 11: 195 (October, 1949); *cf.* B.I.P.C. 7: 266.

A brief description of an improved design of the Orion moistening device is given, which will allow the uniform dampening of paper prior to calendering so that no storage period is required. The machine can be installed on

any modern paper machine; the manufacturing rights have been taken over by the British firm of Sternberg & Phillips. E.S.

MACHINERY—PACKAGING MACHINERY

ANON. New bag-filling method for "dusty" products. Modern Packaging 23, no. 3: 92 (November, 1949).

A new filling machine at the Baldwin-Hill Co., Trenton, N.J., automatically bags rock-wool insulation, eliminating the presence of dust, formerly an occupational hazard. The difficulty of controlling uniformity of weight is also overcome, making the process more economical. This same machine can be used for packing asbestos fibers, beet-sugar pulp, and soybean pomace. J.A.B.

MACHINERY—PAPER MACHINE

ANON. Mando rebuilds paper machine in record time. Can. Pulp Paper Ind. 2, no. 11: 6-7 (November, 1949); *cf.* B.I.P.C. 20: 101.

A brief description is given of the complete removal of the old No. 4 paper machine at International Falls and the rebuilding of the new unit in 49 days. The remodeling included the removal of one wall of the paper machine room to accommodate the increased length of the new machine, the installation of four new Bird screens, the lengthening of the Fourdrinier wire from 70 to 100 feet, the addition of eight new suction boxes and seven driers, and a complete sectional electric drive of the latest type. The revamped machine is capable of producing a great range of higher-grade paper products. 2 illustrations. E.S.

STEWART, A. E. Bowater's No. 7 machine. Can. Pulp Paper Ind. 2, no. 11: 10-12 (November, 1949); *cf.* B.I.P.C. 19: 258.

The details of the new 284-inch newsprint machine of Bowater's Newfoundland Pulp and Paper Mills at Corner Brook are described. E.S.

MACHINERY—PRESSES

DOWNINGTOWN MANUFACTURING COMPANY. New direct roll loading, recording and controlling. Paper Mill News 72, no. 43: 28-9 (Oct. 22, 1949).

Following a consideration of the uncontrolled variables likely to be found at the press rolls of the paper machine, an illustrated description is given of a new direct roll-loading, recording, and controlling device employing a strain-gage sensitive bar. The mechanism has no moving parts to wear, does not change its calibration with use or temperature change, is simple and inexpensive to install, and is coherently accurate enough to encourage its use as a weighing system in many industrial applications. It minimizes drying costs by recording and controlling nip pressures and ensures the maximum production of a uniform product. Other features of the device are given. 3 figures. R.R.

EDGE, JACOB. The plain press of tomorrow. Paper Mill News 72, no. 47: 81-2 (Nov. 19, 1949); Southern Pulp Paper Manuf. 12, no. 12: 53-5 (December, 1949).

Improvements incorporated in the new Downingtown plain presses include nondeflecting rolls and weight-indicating equipment in the form of strain gages connected to recording and controlling equipment. The nondeflecting principle is accomplished by the double-element construction of the roll; the inner element takes the weighting and deflecting, leaving the outer element undistorted, so that it presents a perfectly straight nip line to

the paper which it is pressing. These rolls must always work with a roll presenting as level a surface as they do themselves, although work on anti-deflection rolls to be used with a crowned roll is in progress, but not yet ready for discussion. E.S.

MACHINERY—PRINTING MACHINE

BLAKEMORE, FRED T. New aniline press for cellophane. Am. Paper Converter 23, no. 11: 24 (November, 1949); Inland Printer 124, no. 2: 76 (November, 1949).

Brief reference is made to a new aniline press made by the Kidder Press Co., the latest in the company's line of Celloprinters. It is designed primarily for cellophane, but is also capable of handling all grades of paper and lightweight board stocks. It operates at speeds up to 500 ft./min. E.S.

MACHINERY—SCRUBBERS

JOHNSTONE, H. F., and ROBERTS, M. H. Deposition of aerosol particles from moving gas streams. Ind. Eng. Chem. 41, no. 11: 2417-23 (November, 1949).

The efficiency of deposition of aerosol particles on water droplets moving by centrifugal force across a rotating gas stream is calculated on the basis of Sell's theory of impaction. For accelerations of 100 times gravity the maximum efficiency is obtained with droplets of about 100μ diameter. Impaction falls off rapidly for particles below 2μ diameter and deposition by diffusion becomes important for very small particles. The development of the new Venturi scrubber for collection of dust and absorption of gases during the atomization of a liquid in a high velocity gas stream is described. Large scale installations of this device have given efficiencies of removal of fume from industrial gases between 92 and 99%. The efficiency is a function of the specific drop surface developed per unit volume of gas and depends also on the nature of the fume. 3 tables, 8 figures, and 15 references. E.S.

JONES, WILLIAM P. Development of the Venturi scrubber. Ind. Eng. Chem. 41, no. 11: 2424-7 (November, 1949).

A recently developed method of wet gas scrubbing is discussed. High efficiencies are obtained in removal of mists and dusts by utilizing high gas velocity in a Venturi tube for collision with and atomization of a stationary sheet of liquid. Several commercial installations where submicron dust is removed from gas streams are reviewed. A pilot plant handling 1000 cu. ft./min. of gas has been used on a variety of applications involving removal or recovery of low micron and submicron dust and sulfuric acid mist. Removal efficiencies of 98 to 99.8% on sulfuric acid mist can be attained economically. 10 figures and 4 references. E.S.

MACHINERY—SUCTION ROLLS

GLAUNER, EMERSON N. Suction rolls on tissue machines. Paper Trade J. 129, no. 19: 33-5 (Nov. 10, 1949).

Following a brief description of the mechanical construction of the Downingtown suction roll, the types in use on tissue machines are discussed, including press rolls, couch rolls, pressure rolls, and felt-cleaning rolls. 4 illustrations. E.S.

MACHINERY—VATS

VANDER VELDE, M. H. Cylinder mold exhaust system. Paper Mill News 72, no. 47: 90 (Nov. 19, 1949).

The installation of a J. O. Ross Engineering Corp. cylinder-mold exhaust system and its advantages are briefly outlined. 3 illustrations. E.S.

MACHINERY—VORTRAP

NICHOLS ENGINEERING AND RESEARCH CORPORATION, *New York*. New large Vortrap for board mills. Fibre Containers 34, no. 10: 88-90 (October, 1949).

A new large 10-inch Vortrap has been introduced, whose primary purpose is the removal of heavy particles in relatively large quantities, such as board mill filler-stock systems, deinking systems, or pulp mills. The first installation was made at the Gibraltar Corrugated Paper Co., Inc., North Bergen, N.J. E.S.

MAGNETS

HUMMEL, FRED E., JR. Magnetic separators eliminate tramp iron. Paper Ind. 31, no. 8: 946-7 (November, 1949).

Different magnetic separator installations in southern mills are described, where the problem of tramp iron introduced through pulpwood from turpentine areas is always present. The magnets should be installed in the stock flow system ahead of the machinery it is desired to protect (refiners in particular); it is more practical to remove the tramp iron from chips and pulp than from whole logs, although chipper knives are damaged by its presence. The time a magnet should be allowed to run before being cleaned is indicated by the extent of tramp iron in a particular installation; as a general rule, once a week will be sufficient. An improved installation is now available which consists of a self-cleaning magnet. 4 figures. E.S.

MATERIALS HANDLING

ANON. New J & J shipping center equals four football fields in size. Packaging Parade 17, no. 202: 40-1, 47 (November, 1949).

An ultramodern shipping center, covering 207,000 square feet of floor space, has been opened by Johnson & Johnson at New Brunswick, N.J. Designed to reduce the time required to assemble and ship an order from days to hours, its innovations include a 4-wheel dragline truck system, a hand-operated label applicator, and a mechanical dockboard. Two railroad tracks lead to the main line of the Pennsylvania railroad, and there are 15 loading and unloading bays for rail traffic, in addition to 14 loading docks for truck traffic. A system of perpetual inventory insures proper rotation of stock. 9 figures. J.A.B.

ST. REGIS PAPER COMPANY. Wrapped unit-loads of bags have built-in slots for lift truck forks. Chem. Processing Preview 12, no. 11: 56 (November, 1949); Packaging Parade 17, no. 203: 77-8 (December, 1949).

Reference is made to the arrangement of 1000 to 2000 multiwall paper bags into one unit with two built-in expendable, either rectangular or circular paperboard slots, into which the forks of any standard lift truck may be inserted. The unit is subjected to pressure to compress the bags into a solid, flat, and compact bundle, which is wrapped in protective kraft paper and steel banded. This unit load system avoids the possibility of stacked pallets collapsing and distorting the bundle. In addition, there is no loss of space in stacking. E.S.

SCHROEDER, CHARLES S. Floor load capacity rating and its relation to industrial power trucks. Tappi 32, no. 11: 84A, 86A (November, 1949).

Simple calculations are presented which will indicate if an upper floor of a building has sufficient capacity to support a loaded industrial power truck, in addition to the material or machinery already stored on this floor. If these computations indicate that the weight of the proposed trucks approaches the maximum safe figures, a detailed study by a competent engineer should be made prior to the installation. If, on the other hand, the weight of the loaded machines is comfortably below the maximum figures and the building is in good repair, it would be safe to apply a trucking system without such a detailed engineering study. E.S.

METERS AND RECORDERS

MURPHY, E. A. Level control provides accurate proportioning of digester cooking liquors. Pulp Paper Mag. Can. 50, no. 11: 106-7 (October, 1949).

The operation of an automatic system of liquid level control is described, which proportions exact amounts of white and black liquors to digesters. The system has many possible uses in similar batch processes. 1 diagram. E.S.

MICROBIOLOGICAL TESTING

SHEMA, B. F., ANDERSON, J. B., and APPLING, J. W. Bioassay of slime control agents in a pulp and paper mill system. I. *Lignasan X and Merfenel.* Tappi 32, no. 11: 489-92; discussion: 492-4 (November, 1949).

The use of various chemicals for slime control in the pulp and paper industry has increased tremendously in the past eight years. This demand for an effective toxicant has resulted in the introduction of a number of bacteriocides and fungicides for microbiological control. The effective sale of any given slime control agent requires its manufacturers to make specific recommendations relating to its use. These may include recommendations for dosage rates, and these may vary, first, because of the actual toxicity of the active ingredients and, second, because of the amount of the active ingredient present in the compounded product. Because of these variances in dosage rates, it is often desirable to determine quantitatively the amount of a particular toxicant at a given point in a mill system. A bioassay method has been developed that is suitable for testing mercurials; by the substitution of the proper organism, it can probably be adapted to the testing of other toxicants. 2 tables, 4 figures, and 2 references; 4 references listed with discussion. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Bacteriological examination of paper and paperboard. Tappi 32, no. 11: 88A, 90A, 92A (November, 1949); *cf.* B.I.P.C. 11: 72.

This is a revision of TAPPI Tentative Standard T 449 m-45, covering the bacteriological examination of paper and paperboard. 2 references. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Bacteriological examination of process water. Tappi 32, no. 11: 96-8A (November, 1949); *cf.* B.I.P.C. 16: 5.

This is a revision of TAPPI Tentative Standard T 631 m-45 covering the recommended procedure for the bacteriological examination of process water; it is also applicable to slush stock. 1 figure and 2 references. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Bacteriological examination of pulp. Tappi 32, no. 11: 92A, 94-6A (November, 1949); *cf.* B.I.P.C. 15: 445.

This is a revision of TAPPI Tentative Standard T 228 m-45, covering the recommended bacteriological examination of wet and dry pulp in sheet form. The procedure for examination of slush pulp is included in T 631 m, which deals with the bacteriological examination of process water. 2 references. E.S.

MILL CONSTRUCTION

WHITE, A. D. Design for construction in the pulp and paper industry. Paper Mill News 72, no. 47: 64 (Nov. 19, 1949).

The author discusses the factors involved in a new mill construction, including selection of site; machine location plans; schedules of construction, engineering, and purchasing; the setting up of a construction organization; and actual construction. All activities in connection with a project must be handled in co-ordinated manner, without loss of time. Sound and complete liaison between the design and paper-mill engineers and the construction forces will produce the most satisfactory results. Design and construction require the services of men who specialize in this field; they represent a professional activity common to no particular industry. E.S.

MOLDS

MACDOUGALL, G. Mould infection of a package. PATRA J. 12, no. 2: 28-9 (July, 1949).

A study of the infection by molds of the inside of a package used for screw-cap bottles containing a liquid product with a large percentage of water revealed that the liquid leaked past the closures of a few bottles, dampened the packages, and provided ideal conditions for the growth of the mold spores present in the paper and board. When the bottle closure was changed to prevent further leakage, no mold was observed. R.R.

NOMOGRAPHIC CHARTS

KARPINSKI, JOHANN. Graphic representation of the manufacturing costs of power generation and heating with exhaust steam. Das Papier 3, no. 17/18: 350-5 (September, 1949). [In German]

Directions are given for the simple graphic representation of the consumption of live and exhaust steam in an industrial steam power plant, which will give at a glance an indication of the relationships between steam consumption, output, efficiency, etc. The diagrams are intended as an aid to management, and not as a substitute for the usual calculations. 2 diagrams. E.S.

ODORS

FARBER, LIONEL. Chemical evaluation of odor intensity. Food Technol. 3, no. 9: 300-4 (September, 1949).

A chemical procedure, which was originally developed for the determination of spoilage in fish products, has been shown to be applicable to the estimation of the content of volatile substances in a wide variety of products. The method is based upon the determination of the volatile reducing substances by aspirating a known volume of purified air through the material into a standard solution of potassium permanganate in sodium hydroxide. The amount of reduction of the potassium permanganate is determined iodi-

metrically and is used as the index of the content of volatile material. The use of the procedure as a general method for evaluating the content of odorous constituents is also briefly discussed. 3 figures, 13 tables, and 8 references. E.S.

PAPER—COATED

GOLLIN, N. W. Automatic controllers assure uniformity in preparation of paper coating materials. Paper Mill News 72, no. 43: 59 (Oct. 22, 1949).

One of the most important steps in the preparation of coatings is starch cooking. The Taylor Instrument Co. Time Schedule Controller, the operation of which is described, automatically provides for a uniform temperature rise, holds the product at the conversion temperature for the desired length of time, heats it as rapidly as possible to a temperature which stops enzymic action, and holds it at the maximum temperature until there is no further enzymic action. R.R.

PAPER—COATED (HOT-MELT)

ANON. What's new in vinyl spread coating? Modern Plastics 27, no. 3: 86-9, 148, 150-1 (November, 1949); *cf.* B.I.P.C. 20: 185-6.

Equipment used for vinyl spread coating is numerous and varied in mechanical form. In the present article heating apparatus, insulation, embossing rolls, take-off and wind-up equipment, and mixers are discussed. Although the article is written from the aspect of coated fabrics, much of it applies equally well to the coated-paper industry. Special reference is made to the increasing use of plastisols and organosols and their advantages over the more expensive and often hazardous solvent coating. There is a growing tendency to increase the amount of coating and decrease the thickness of the fabric. One of the latest heating units which holds great promise for the spread-coating industry is a compact radiant heater in which the heating elements are enclosed in glass fiber; it is claimed that a coating line employing this heater can be compressed in a 43-foot space, as compared with the standard 90-foot line previously required for the identical output. 6 illustrations. E.S.

CLARKSON, D. L., and MACLEOD, N. D. Polyvinyl chloride pastes. Chemistry & Industry [68] no. 44: 751-5 (Oct. 29, 1949).

The authors discuss the manufacture, properties, processing, and applications (fabric or paper coating, casting, hollow casting, dipping, and molding) of polyvinyl chloride polymers as a dispersion in plasticizers in the form of liquid pastes. 2 tables, 8 figures, and 4 references. E.S.

PAPER—OPTICAL PROPERTIES

VAN DEN AKKER, J. A. Scattering and absorption of light in paper and other diffusing media; a note on the coefficients of the Kubelka-Munk theory. Tappi 32, no. 11: 498-501 (November, 1949).

The majority of the optical properties of paper depend for their evaluation on diffuse reflectance which, in turn, is related through the Kubelka-Munk theory to the scattering and absorption coefficients of the paper. The latter have often been employed in studies of the optical properties of paper and other light-scattering media. In the development of their useful theory, Kubelka and Munk have followed the convention of employing distance

(x) as the independent variable. In the application of the Kubelka-Munk theory, thickness (X) has not proved to be a convenient quantity; for example, it has usually been found to be expedient to substitute basis weight for X. The awkwardness of X in the theory is illustrated in: (1) the apparent change in S and K when density is changed in such manner that the scattering power and absorbing power of a sheet actually do not change; (2) the difficulty of relating formulas, based on weights of the components, with X; and (3) the difficulty of relating the absorption coefficient of coloring matter in solution with the contribution of such coloring matter to the calculated absorption coefficient of pulp or paper. It is shown that the differential equation on which the Kubelka-Munk theory is based can be replaced with one that is mathematically equivalent, but in which S and K are replaced with, respectively, the specific scattering coefficient (s) and the specific absorption coefficient (k) and in which an infinitesimal increment in distance (dx) is replaced by an infinitesimal increment in weight per unit area (basis weight) (dW). All the relationships of the Kubelka-Munk theory, all tabulations, and all charts remain the same except that W everywhere replaces X, s replaces S, k replaces K, and, in particular, sW replaces SX. It is suggested that new compilations of the theory and new issues of charts be modified in accordance with these simple changes. The advantages of the change in point of view are discussed with illustrative cases. 7 references. E.S.

PAPER AND PULP INDUSTRY

FIFE, Ross A. Today's outlook for tissue products. Am. Paper Merchant 46, no. 11: 24, 28 (November, 1949); Am. Paper Converter 23, no. 11: 18, 28 (November, 1949).

The prospects for sanitary tissues indicate a strong market for paper towels, toilet paper, and facial tissues, in spite of an anticipated slackening of demand in the postwar period. Wrapping tissues, on the other hand, were sharply curtailed during the war; although an artificial demand level was maintained during the immediate postwar years, a sharp falling-off in orders resulted late in 1948 and continued through the first seven months of 1949. Recently, there has been a marked revival in demand, which is to some extent a seasonal pickup; improvements in selling techniques are considered the logical solution for strengthening the wrapping-tissue market. E.S.

FOWLER, R. M. Paper for world markets. Western Pulp and Paper 2, no. 7: 6-7, 30 (July, 1949); Paper-Maker (London) 118, no. 4: 251-2 (October, 1949).

Canada is one of the greatest exporting countries, ranking with the leading nations with regard to animal and agricultural products, minerals, and metals, and leading the world in the export of newsprint. From Canadian mills come three out of every five newspaper pages printed around the globe. Only 6% of the Canadian production is used in the Canadian market; most of the newsprint exports move to the United States and, in addition, Canadian newsprint also goes to 70 other countries. Before the war, the United Kingdom was Canada's second largest market for newsprint, receiving an average of more than 300,000 tons per year. In the financial crisis of July, 1947, Government guaranteed contracts for 250,000 tons per year were reduced to 100,000 tons annually. Canada is also the second-largest producer and exporter of pulp. Pulp and paper account for more than 20% of all Canadian exports and for 40% of all commercial exports to the United States. The pulp and paper industry dominates the Canadian industrial

scene. It is not only the largest industry in the country, but it is Canada's most valuable industry, standing first in production, exports, employment, total wages paid, and capital invested. E.S.

NEUBRECH, W. LEROY. Pulp, paper and board industry report. Southern Pulp Paper Manuf. 12, no. 11: 16, 18 (November, 1949).

Excerpts from the September, 1949, Industry Report of the U. S. Office of Domestic Commerce are presented. E.S.

SMITH, E. HOWARD. Fine papers in Canada. Pulp Paper Mag. Can. 50, no. 11: 90-1 (October, 1949).

The author presents a brief review of the fine paper industry of Canada, including the principal producers, the range of papers made, and the marketing and exports of fine papers. Because of import duties imposed by most countries on practically all grades of fine papers, the Canadian industry is largely confined to the domestic market; of the approximately 200,000 tons produced in 1948, over 90% was for domestic consumption and 8.5% for export, chiefly to soft-currency countries. The task of the industry is the production of the wide range of papers in comparatively small volume at prices which are competitive with U. S. mills, where mass production can be applied. The manufacture of fine papers requires a large number of man-hours and a very heavy capital investment per ton of finished product. Flexible equipment and a broad knowledge of papermaking are essential. E.S.

PAPER AND PULP INDUSTRY—EDUCATION

ANON. Finland's Institute of Technology has celebrated its centenary. Finnish Paper Timber J. 31, no. 18: 336-8, 340-3 (Sept. 30, 1949). [In English]

An illustrated description of the ceremonies at the centenary celebration of Finland's Institute of Technology, September 13-14, 1949, is given, including a brief historical account of the development of the university in relation to the development of Finnish industry and commerce, its present activities, curriculum, and manifold contacts with the industrial and economic life of the country. The Institute has always tried to adapt itself to existing conditions and the increased demands of growing industrialization. On account of the important part played by Finland's industries based on her forest wealth, technical education in this field received attention at a fairly early stage, at first in connection with mechanical engineering. However, it was soon recognized that a more specialized knowledge was required by engineers qualifying in this branch, and, in 1942, a special Department of Mechanical and Chemical Wood Technology was founded, including the following sections: sawmill and plywood industry, cellulose industry, and paper engineering. The number of students at the university has about doubled since 1939 and averages 2200 per year; the teaching staff has been increased correspondingly. E.S.

ANON. Model paper mill part of WMC's newly-dedicated science building. Paper Ind. 31, no. 8: 924-5 (November, 1949).

The basement of the recently completed science building of Western Michigan College at Kalamazoo is given over to the department of pulp and paper technology headed by A. H. Nadelman. A list of equipment received and installed at the end of October is given. E.S.

PAPER AND PULP INDUSTRY—LAWS AND LEGISLATION

PARKER, LEO T. Review of new lawsuits affecting the paper and pulpwood industry. Paper Ind. 31, no. 8: 943-5 (November, 1949); *cf.* B.I.P.C. 19: 235.

Different lawsuits of interest to the industry and the decisions by higher courts are reviewed. E.S.

PAPER AND PULP INDUSTRY—PUBLIC RELATIONS

TINKER, E. W. Social and economic aspects of the pulp and paper industry. Fibre Containers 34, no. 10: 39-40 (October, 1949); *cf.* B.I.P.C. 20: 15.

The author stresses the importance of the pulp and paper industry in the national economy of the United States and emphasizes the need for a better public understanding of the industry's problems, merits, and benefits. E.S.

PAPER AND PULP MILLS

ANON. Coosa River nearly completed; to start in January. Paper Mill News 72, no. 47: 50 (Nov. 19, 1949); Pulp & Paper 23, no. 12: 34 (November, 1949); *cf.* B.I.P.C. 19: 712.

Brief reference is made to the impending operation of the new newsprint mill at Childersburg, Ala., by the Coosa River Newsprint Co., the operating personnel of the mill, and some of the important features. The Kimberly-Clark Corp. has complete responsibility for the management of the mill. E.S.

ANON. Fabrica Nacional de Papel's new mill in operation. Southern Pulp Paper Manuf. 12, no. 10A: 38, 40 (Oct. 31, 1949); Paper Ind. 31, no. 8: 928-9, 931 (November, 1949); Paper Mill News 72, no. 47: 88-9 (Nov. 19, 1949).

An illustrated description of the new straw paper mill in Montevideo, Uruguay, is given, which was started on September 15, 1949, by Fabrica Nacional de Papel. The complete layout of the mill, including the foundation hewn from solid rock, was designed by The Sandy Hill Iron and Brass Works at a site adjacent to the company's existing pulp and paper mill. The stock-preparation system consists of a 10-foot Dilts Hydrapulper on the same floor as the paper machine and two Noble and Wood Victory beaters, including stock chests for kraft, sulfite, and broke. Bleached straw pulp is supplied to the beaters in slush form or as wet laps. Special features of the Fourdrinier machine are described, which is designed for a maximum speed of 500 feet and a wide range of papers, including straw paper. E.S.

ANON. Mill and personnel directory. Southern Pulp Paper Manuf. 12, no. 10A: 65-153 (Oct. 31, 1949); *cf.* B.I.P.C. 19: 259.

The annual directory of the pulp and paper mills in 14 southern states (including the District of Columbia) and Puerto Rico—the 11th annual cumulation—is presented, listing executive personnel, equipment, and products made in these mills. A list of mills discontinued is also given. The data are interspersed with advertisements. J.A.B.

ANON. Weyerhaeuser's affiliate—Potlatch Forests—to build mill in Idaho. Paper Ind. 31, no. 8: 925-6 (November, 1949); Paper Mill News 72, no. 44: 5 (Oct. 29, 1949); Pulp & Paper 23, no. 12: 32 (November, 1949); Paper Trade J. 129, no. 15: 10 (Oct. 13, 1949).

Potlatch Forests, Inc., a Weyerhaeuser affiliate, announced the construction of a new pulp and paper mill at Lewiston, Idaho, to utilize the mixed woods left after the lumbering of white pine which grow abundantly in the northern part of the state. The new project signifies an integration of the company's existing lumber facilities with the manufacture of pulp and paper. William P. Davis was selected to head the expanded activities. E.S.

OSBORNE, CHARLES. A Scottish enterprise. Paper Making and Paper Selling 68, no. 2: 34-7 (1949).

The Clyde Paper Co. Ltd., now nearly 100 years old, consists, in addition to its original plant, of a plant for the use of esparto as the main material for papermaking, two coating factories, a power station, and a recovery plant for reclaiming the caustic soda used in the boilers. The process of making paper from esparto on two machines and the coating procedure used by this company are described; newsprint is produced on a third paper machine. 7 illustrations. J.A.B.

PAPER SPECIALTIES

ANON. Boon to builders. Modern Packaging 23, no. 3: 90-2 (November, 1949).

A new method of compressing Kimsul insulating material so that it occupies only one-fifth of the space otherwise required has been developed by Kimberly-Clark Corp. Special equipment compresses the lengths to between 10 and 15 linear feet, after which they are rolled and banded with plain kraft paper to prevent unwinding and loosening. 6 illustrations. J.A.B.

ANON. Carbon paper. Papetier 3, no. 10: 39, 41 (October, 1949). [In French]

A brief description of different varieties of the two principal types of carbon paper for handwriting or machine transfer is given. E.S.

ANON. Vinyl-coated milk carton. Modern Packaging 23, no. 3: 80-5, 178 (November, 1949).

The Bowman Dairy Co. of Chicago reports that its experimental paper milk carton coated with vinyl plastic instead of the usual paraffin has met with much success. The carton is shipped flat in three pieces—side walls, bottoms, and tops—and is set up at the dairy, thereby reducing shipping costs and storage requirements. Specially designed machines first sterilize the components, then assemble them, using heat and high pressure. A small strip of aluminum foil extending from under one corner of the top indicates the day of the week and facilitates folding the corner back for pouring. 9 illustrations. J.A.B.

DAY, FREDERICK T. Recent advances in aids to packing merchandise. Brit. Packer 11, no. 9: 57, 59, 72 (September, 1949).

Of special interest to the packer of unusual and irregularly shaped pack-

ages are some of the new materials available for this type of work. A tape shooter which dispenses gummed tape in two lengths at once, an odorless sealing tape for use particularly in food packing, kraft glued squares and circles for sealing the ends of packages, and "streamlined" sealing tape for greater grip strength and neater corners are among those mentioned here. 1 illustration. J.A.B.

HAMILTON, BYRON. Christmas cards. Can. Printer Publisher 58, no. 10: 30-1 (October, 1949).

The possibility of building up a good business on the printing of Christmas cards is suggested. Sample books of printers' blanks and special paper stocks, catalogs of stock photos and cuts, and samples of work done for others can be used by the printer to secure orders. The various accepted formats are described and the importance of obtaining orders early to avoid disappointed customers is emphasized. The printer who takes orders for Christmas cards will do well to consider also such printing as special Christmas pay envelopes, labels for gift wraps, and holiday stationery. R.R.

HARDY, WALTER L. Linings for shipping containers. Modern Packaging Encyclopedia, 1950: 765-6 [New York, Packaging Catalog Corp., c1949] *cf.* B.I.P.C. 18: 388.

A brief review is given of liners for metal drums, fiber drums, boxes and cases, crates, paper shipping bags, railroad cars, and as shrouds. Available and applicable materials range from numerous synthetic coatings to the use of single or laminated foils, films, papers, and fabrics. The proper selection must be based on (1) a thorough knowledge of the behavior of the product to be protected under all possible conditions and hazards of shipment and storage, (2) the type of shipping container selected as the most suitable for the purpose; and (3) performance tests of the linings and containers indicated as being the most likely to succeed. 2 tables. E.S.

HARRISON, V. G. W. Letterpress printing paper. PATRA J. 12, no. 2: 18-21 (July, 1949).

The ideal letterpress printing paper would possess a combination of qualities which it is difficult or impossible to satisfy; such a paper would exhibit good color and brightness, good opacity, low gloss, and sufficient smoothness to make satisfactory contact with the type or printing block during impression without the use of excessive pressure. In addition, it would have good mechanical strength and durability, exhibit oil consumption suited to the ink with which it is to be used, and be free from dirt, fluff, and loose fibers. A good machine-finished paper satisfies many of these requirements. Its main defect is its rough surface, which prevents satisfactory reproduction of halftone work. Calendering the paper produces a more suitable surface for halftone, but also results in serious disadvantages, such as lowered brightness, opacity, and oil absorption, and increased gloss. Coated art paper combines opacity, brightness, and smoothness, but is more expensive, easily damaged, and may result in picking. It is possible that improvements in the letterpress printing process itself will enable mechanically rougher papers to be printed satisfactorily. 4 photomicrographs. R.R.

LEEDS SALES COMPANY, INC. *Specialty Package Division, New York.* Low cost Leedpak heat sealing web evolved. Am. Paper Converter 23, no. 11: 21 (November, 1949).

Brief reference is made to a new low-cost, preprinted, heat-sealing paper supplied in rolls for use on automatic packaging, sealing, and bagmaking machinery. The paper is converted on a dual-operated press, which prints two colors on the face of a narrow web, while a heat-sealing resin is simultaneously applied to the back of the sheet in spots where the jaws of the sealer will come together. The paper has so far been used for the packaging of "Jack Frost" individual sugar packets; however, webs for the packaging of any free-flowing granular product consumed in small units can now be produced. E.S.

PAPER SALES. Educating the buyer will increase your gummed tape sales. Paper Sales 9, no. 11: 18-21, 30, 32, 34, 36 (November, 1949).

A discussion is given of the proper usage of gummed tapes, and the importance of this information to the buyer is emphasized. The salesman, in order to be assured of a satisfied customer, should point out the advantages of selecting the correct width tape, the importance of proper moistening and application, and the dangers of storage near heat and moisture. In a series of 18 questions and answers, some of the basic facts about gummed tapes are presented; diagrams show how to apply them properly to shipping cartons, carry-home packages, and soft-wrap packages. Federal specifications are included in table form. 18 diagrams and 1 table. J.A.B.

THILMANY PULP AND PAPER COMPANY, *Kaukauna, Wis.* Improved facilities and new products from Thilmany modernization program. Paper Mill News 72, no. 47: 92, 95 (Nov. 19, 1949); Packaging Parade 17, no. 202: 66-7 (November, 1949); Am. Paper Converter 23, no. 12: 22 (December, 1949).

Following a brief reference to Thilmany's physical plant changes and improvements, mention is made of the adaptation of the redesigned machines to the production of new products. Outstanding among these are a new steel-reinforced, asphalt-laminated kraft paper for grain-retaining doors and similar purposes, and a superior grade of diamond-mesh, fiber-reinforced (rayon, nylon, jute, glass fiber, etc.), asphalt waterproof paper. The manufacture of these specialties is briefly outlined. 4 illustrations. E.S.

PATENTS

WEST, CLARENCE J. United States patents on papermaking; second quarter, 1949. Tappi 32, no. 11: 55-6A, 58A, 60A, 62A (November, 1949); *cf.* B.I.P.C. 19: 863.

A list of U. S. patents on papermaking for the second quarter of 1949 is presented. E.S.

PEANUT

ARTHUR, JETT C., JR. Evaluation of peanut protein for industrial utilization. A review. J. Am. Oil Chem. Soc. 26, no. 11: 668-71 (November, 1949); *cf.* B.I.P.C. 19: 105.

The physico-chemical properties of peanut protein are briefly reviewed, and procedures for the evaluation of this protein for different industrial uses (adhesives, sizes, water-thinned paints, and fibers) are indicated. The following methods for peanut evaluation are employed; solubility in different solvents, analysis of the isolated protein to determine its nitrogen and ash contents and its color when dispersed in sodium hydroxide solutions, viscosity characteristics of concentrated solutions, and specific product testing. 25 references. E.S.

PHYSICAL TESTING—COATED FILMS

STEFFENS, H. G. Impact on cap liners. Modern Packaging 23, no. 3: 121-5, 174, 176 (November, 1949).

An apparatus and statistical method are described for estimating the shock-impact resistance of coated or laminated paper used in the manufacture of cap liners for glass containers. The specimen is placed between a hinged platform and a steel-base plate covered with a thin rubber mat of definite dimensions and hardness, which acts as a cushion. The contact of the hinged platform with the coated specimen is effected through a steel ball dropped from a magnet fixed to a horizontal steel bar; the force of impact is varied according to the size and weight of the ball dropped; steel balls are selected at 1/16-inch diameter intervals. From 50 to 100 impact tests per sample should be made; for purposes of control testing, 60 impact tests would appear to be sufficient to give accurate information concerning the sample. The necessary calculations and statistical analysis of the data (the latter based on the tables by Fisher and Yates [London, Oliver and Boyd, 1938]), are described. At present the method is restricted to unmounted facing materials, since the effect of variations in the resilience of backing boards, felts, and cork has not been suitably studied. 4 tables, 6 figures, and 2 references. E.S.

PHYSICAL TESTING—INK

COUPE, R. R. How to make an ink drying-time tester. PATRA J. 12, no. 2: 14-17 (July, 1949).

A detailed description is given of a simple drying-time tester for testing inks before they are used. The ink under investigation is rolled out on a glass disk fixed to a turntable, which can be placed on any of four spindles, depending upon the anticipated drying time; the glass plate will then rotate one revolution in either 4, 8, 12, or 24 hours. A needle fixed to a crossbar draws a spiral track in the ink film and the track is observed under a low-power binocular microscope. Usually three regions are seen fairly sharply divided from one another: (1) the initial region, where the needle has punctured a liquid film which has healed; (2) a region where a wound has been produced with straight rounded edges and which has not healed over; and (3) the final stretch where the film was solid and a tear with jagged edges has been produced. The transition from (2) to (3) provides an assessment of the drying time. With some inks which set to a hard scratchproof film a fourth section is noticed, where the needle does not penetrate the film, but rides upon the surface. 3 illustrations. E.S.

PHYSICAL TESTING—PAPER—MOISTURE

COLES, RALPH V. Automatic control of moisture. Electronics 22, no. 11: 82-6 (November, 1949).

Reference is made to the Drimeter, an instrument introduced in English textile mills, and later in paper mills, for measuring the moisture content of a moving strip of fabric or paper. It consists of an electronic hygrometer which indicates the moisture content of the yarn or web instantaneously and continuously on a panel, and a capacitor consisting of a mounting arm and two plates between which the material passes. The capacitor and hygrometer are connected by cables which may be up to 30 feet in length. At first, an operator had to read the meter and adjust the drier speed manually. In the present article a detailed description of automatic electronic control equipment is given, which makes corrections proportional to the

error in moisture content as the material passes through measuring electrodes. For textile applications, the automatic control-unit relays control a small reversing motor which is connected to the drying-machine speed control. In the case of paper machines, speed control cannot be employed and control of pre-extraction, temperature, or squeeze roll pressure must be adopted. 6 illustrations. E.S.

PHYSICAL TESTING—PAPER—PRINTABILITY

CRONEY, R. G. W. Printing pressures and cylinder coverings. PATRA J. 12, no. 2: 6-9 (July, 1949).

An illustrated description is given of apparatus designed to measure the actual pressure generated at the instant of printing impression in a flat-bed cylinder machine. By its use PATRA is studying the nature of the deformation of cylinder materials of different kinds, the means by which printing pressure is distributed on type of various sizes and kinds and on halftones of varying density, and the printing factors which control the fidelity of type and halftone reproduction. It will also be useful for making experimental prints under controlled and known pressures. In addition, studies are being made of the deformation of cylinder coverings by means of another unit, which is also described. 2 illustrations. R.R.

LATIMER, K. B. Predetermining printability. Tappi 32, no. 11: 72A, 74A, 76A (November, 1949).

The author discusses several tests used by Time Inc. and their limitations for determining the desirable qualities of a coated letterpress printing paper: a Brush surface analyzer for determining smoothness, a laboratory press for testing ink receptivity, and a special micrometer for measuring the resilience and springback of a sheet. The importance of paper moisture on the quality of heat-set multicolor rotary printing is pointed out, a factor which is of extreme importance to inkmaker, printer, and papermaker. At present, a moisture range between 4.5 and 5.5% will give almost trouble-free operation; at lower moisture contents, the sheet becomes brittle and tends to break, whereas when the moisture content is too high, blistering of the coated sheet on passage through the ink driers is liable to occur. In conclusion, several ink evaluation tests are described. The present inks still represent a compromise between extremes. For four-color work, a particularly attractive combination would result from a dull-coated paper with the smoothness and low receptivity of a glossy paper and highly pigmented, low-boiling solvent, high-gloss inks that will stay on top and not penetrate the coating. E.S.

PHYSICAL TESTING—PAPER—SIZE RESISTANCE

CARSON, F. T. The dry-indicator method as a test for water resistance. Tappi 32, no. 11: 501-5 (November, 1949).

Five types of water-resistance tests are briefly described: absorption methods, depth-of-penetration methods, functional-failure methods, initial-transudation methods, and discharge-rate methods. The dry-indicator method belongs to the fourth type which indicates how well a material resists water penetration. Although much used, the method has sometimes been severely criticized. The chief criticisms discussed relate to indefinite endpoint, effect of water vapor, blindness to changes that occur after the endpoint, two-sided behavior, and differences in batches of dry indicator. The conventional nomenclature for the resistance of membranes to the passage of fluids, based

on the entering phase, is defended. Some published data are cited in support of the validity of the dry-indicator method for measuring the water resistance of paper. 10 references. E.S.

PHYSICAL TESTING—PAPER—THICKNESS

MINNEAPOLIS-HONEYWELL REGULATOR CO. *Brown Instruments Division.* New Tracerlab beta gauge. Instrumentation 4, no. 2: 18-20 (July-September, 1949); *cf.* B.I.P.C. 20: 109.

This is a more detailed description of the beta gage than that given in the previous article. The theory of operation is explained and the steps of the procedure outlined. This gage eliminates the possibility of human error, since the system automatically standardizes itself and compensates for minor variables. If Sr^{90} is used as the standard radioactive source material, its renewal is necessary only every 20 or 30 years. 5 illustrations. J.A.B.

PHYSICAL TESTING—PAPER—VAPOR TRANSMISSION

ZAMBITO, A. T. Wrapper test promises more shelf-life. Food Inds. 21, no. 11: 1554-6 (November, 1949).

The Linde Air Products Co. has developed a new method of rapidly and accurately determining oxygen permeability of packaging materials. The basis of this procedure is a sensitive tungsten-filament test for measuring the amount of oxygen that diffuses through a packaging film into a nitrogen-filled chamber. In analyzing for oxygen, a sample of the gas to be tested is drawn into an evacuated electric light bulb. The filament is burned at low voltage, and any oxygen present forms an oxide with the hot tungsten. The oxygen concentration is estimated by comparing the shade and intensity of the oxide coating with a set of previously prepared standard tungsten filaments. 1 diagram, 2 illustrations, and 3 tables. J.A.B.

PHYSICAL TESTING—PULP—STRENGTH

MORDEN MACHINES COMPANY. Morden Stock-maker laboratory unit for high speed control pulp testing. Paper Mill News 72, no. 43: 48 (Oct. 22, 1949).

The Morden Stock-maker laboratory unit is a high-speed, vertical-type unit for treating pulp samples to maximum strength in four or five minutes for production control, particularly in integrated mills. It is not intended as an indicator of the performance of the production-sized unit. An illustrated description of the machine and its operation is given. R.R.

PLASTIC FILMS (NONCELLULOSIC)

PENN, W. S. Properties of plastic film. Part 3. Resistance to heat. Brit. Packer 11, no. 10: 38, 50 (October, 1949); *cf.* B.I.P.C. 19: 866.

When plastics are subjected to heat, first a softening may occur, followed by a reduction in tensile strength and possible loss of plasticizer, causing the films to become brittle; the plastic may finally burn. These effects can be controlled by varying the plasticizer; the phosphates have been found superior to the phthalates in this respect. There are other ways of reducing the inflammability of polymers, particularly by the incorporation of salts. Tables are given to indicate some of the heat properties of plastics, such as softening point, resistance to continuous heat, and burning rate; the effect of varying the composition of the polymer or type of plasticizer; and the

effect of heat on tensile strength. The importance of these properties in the selection of suitable films for export packaging to the tropics is emphasized. 6 tables. J.A.B.

PLASTICS—PAPER-BASE

ANON. Paper with muscles. Plastics Newsfront 4, no. 4: 14-17 (October, 1949); *cf.* B.I.P.C. 20: 110.

One of the leading manufacturers of the comparatively new plastic laminates is the Plastics Division of Consolidated Water Power and Paper Co. at Wisconsin Rapids, Wis. The basic properties of Consoweld decorative and industrial laminates—hardness, relatively light weight, strength, dimensional stability, and low moisture absorption—make them useful for kitchen countertops, bathroom walls, and similar household applications, as well as for the tops of cutting and pasting boards in the leather industry, radio and television tube bases, components of refrigerators and freezers, etc. 11 illustrations. J.A.B.

PLASTICS—PRINTING PLATES

PAULSEN, E. M. Thermosetting plastic printing plates pass test. Am. Paper Converter 23, no. 11: 20, 34 (November, 1949); Fibre Containers 34, no. 10: 104-6 (October, 1949).

The manufacture and advantages of thermosetting (bakelite) printing plates for letterpress printing are described. The plates are uniform throughout, will not burn or support combustion, soften or creep, change or lose dimensions, and do not dent or chip easily. They will reproduce with fidelity the finest hairlines and dots of originals. In addition, they are not affected by any type wash and give perfect coverage of tint blocks and solids. Long runs are possible; when after a large number of impressions, metal plates are showing considerable wear, plastic plates will still give clear and sharp results. E.S.

PLASTICS—TESTING

LONG, JOHN K. Effect of outdoor exposure on plastics. Modern Plastics 27, no. 3: 107-8, 110, 152-4, 156, 159 (November, 1949); Brit. Plastics 21, no. 246: 619-25 (November, 1949).

Some test results are given showing the change in flexural and impact strength properties of 20 different plastics and plastic laminates after outdoor exposure for 29 months in Dayton and 11 months in Miami; changes in warp, twist, and surface appearance were also made, as well as a limited number of accelerated weathering and water immersion tests for determining the effects of these types of exposure on strength properties. Of the wide variety of laminates tested, glass- and cotton fabric-base phenolics, a paper-base, high-pressure phenolic, and several thermoplastics showed no appreciable effect of exposure on flexural strength or flexural modulus of elasticity. Glass and cotton fabric-base urea-phenol-formaldehyde laminates, a glass-fabric, low-pressure phenolic, and a high-strength paper, medium-pressure phenolic all decreased from 25 to 45% in flexural strength and from 20 to 50% in flexural modulus of elasticity after the same exposure. One of the ethylcellulose sheets decreased 40% in flexural modulus of elasticity with no appreciable change in flexural or impact strength. Other ethylcellulose sheets were not noticeably affected by exposure. Cellulose acetate and cellulose acetate butyrate sheets decreased in impact strength but not in flexural strength or modulus. Accelerated weathering tests correlate with these results in the case of the cotton fabric-base urea-phenol-formaldehyde laminate, but not in the case of an ethylcellulose sheet. Wet strength after 24-hour water immersion shows no general correlation

with the strength after outdoor exposure. Measurements indicate an almost negligible increase in warp and twist for the glass fabric-base polyesters and the paper-base phenolics. None of the panels was seriously damaged in appearance as a result of the exposure. 6 tables and 4 references. E.S.

POPLARS

JAYME, GEORG. Chemical studies on poplarwood. Das Papier 3, no. 17/18: 339-42 (September, 1949). [In German]

This is a condensed review of the researches of the author and his co-workers since 1943 (*cf.* B.I.P.C. 19: 308, 577-8, etc.). L.E.W.

PRINTING AND PRINTER'S INK

COUPE, R. R. The drying of letterpress inks. PATRA J. 12, no. 2: 10-13 (July, 1949).

A discussion is given of the drying of letterpress inks by absorption and oxidation, and of cold-set, heat-set, quick-set, and moisture-set inks. 2 figures. R.R.

FORTUNE. Printing. Fortune 40, no. 4: 100-6 (October, 1949).

The general principles of the three major printing processes, letterpress, lithography, and gravure, are graphically explained; a number of colored illustrations depict the progress from copy to press. Roughly 70% of the printing business goes to letterpress, the oldest process; about 20% to lithography, the most recent development; and about 10% to gravure. Each process has special advantages and certain drawbacks. Compared with other industries, the printing industry proper is still putting only a small amount into research, although the demand for more speed, volume, and color has a stimulating effect on technical research. Considering the entrenchment of high skills in the basic processes, the "impending revolution in printing," predicted since the war, is more likely to be an evolution. E.S.

MENNELL, P. B. Ink—and the printer. Paper Making and Paper Selling 68, no. 2: 23-6 (1949).

Some of the difficulties encountered by the ink-maker, in the light of the requirements of the printer and the papermaker, are presented. Such factors as odor, permanence to light, speed of drying, acid resistance, and poisonous qualities must be carefully controlled. J.A.B.

ST. JOHN, EUGENE. Development of methods for printing on plastics. Inland Printer 123, no. 6: 65-6; 124, no. 1: 44-5 (September, October, 1949).

The common methods of printing on plastics involve the use of a special ink which combines with the plastic to become an integral part of it and which cannot be removed without removing the plastic beneath it; an ink which combines with the plastic and which is then covered with a gloss either on a hot press or by means of a spray; or the lamination of a thin film of plastic to thicker sheets to protect the printing. The use of rotogravure, silk-screen, letterpress, offset-lithography, and the aniline printing processes are considered. Wink-Dri, a very quick-drying ink, and inks for the newer plastics in general and for the phenolics, saran, polyethylene, and the vinyls are discussed. R.R.

RADIOACTIVITY

FEARNSIDE, K., and SHAW, E. N. Applications of radioactive isotopes in the paper industry. Paper Making and Paper Selling 68, no. 2: 19-22 (1949).

Artificially produced radioactive materials, commonly known as radioisotopes, can be utilized by the paper manufacturer for (*a*) the tracing of a particular component of a paper, (*b*) the measurement and control of the weight of paper during manufacture, and (*c*) the elimination of static electricity which may be generated during the manufacturing process. Radioisotopes selected for these purposes must not interfere chemically with the other components of the mix, their radiations must not constitute a health hazard to the machine operators, and their half-life must be such that the radioactivity disappears before the paper is sold. 6 figures. J.A.B.

RAW MATERIALS

ANON. The romance and utility of paper; a general reference for users of papers and boards. Part 2. Paper Making and Paper Selling 68, no. 2: 27-9 (1949); *cf.* B.I.P.C. 20: 189.

Papers are made of one or more of the following fibers: cotton, linen, esparto grass, wood, and straw. A brief description is given of each of the fibers, its source, and the comparative quality of the resulting paper.
J.A.B.

RAYON—VISCOSE PROCESS

SAMUELSON, OLOF. Investigations concerning the filtering properties of viscose. IV. Svensk Papperstidn. 52, no. 19: 465-73 (Oct. 15, 1949). [In English; German and Swedish summaries] *cf.* B.I.P.C. 19: 110-11.

In practice, viscose is filtered several times before it is spun. Although numerous investigations have been carried out on the first filtration, literature on the refiltration of viscose is rather scanty. In the present article a number of experiments on the second filtration of viscose and the problems connected with it are described; the results are not in agreement with the theory of reversible aggregates advanced by Bergek and Ouchterlony (*cf.* B.I.P.C. 17: 311). It is shown that clogging of filters caused by the swelling of the dry filter medium may occur, even if the clogging particles have previously been carefully removed from the viscose solution. If this effect receives no consideration, it may lead to incorrect conclusions concerning the filtering properties of viscoses, particularly in the case of refiltration. Experiments with a second filtration indicate that clogging is possible, which can be traced to gel particles present in the viscose; these particles are only partly visible under the microscope. The more dense the filter cloth during the first filtration, the less will be the clogging during the second passage, provided that no high filtering pressure has been used. A relationship was found to exist between the filtering properties of the first and second filtrations; the greater the clogging during the first passage, the greater, in general, is also the clogging during the second filtration. Experiments were made in which the first filtrate was separated into fractions and each fraction filtered independently. The results showed that later fractions exhibited greater clogging properties than the earlier ones. When the first filtration was carried out under high pressure, one of the latest fractions, on refiltration, showed even poorer filtering properties than the original viscose. The clogging particles which have accumulated on the cloth after the first filtration are apparently

pressed through the cloth when pressure is applied. Experiments with a third filtration at different stages of the ripening process indicate that the filtering properties deteriorate on prolonged ripening and that this deterioration parallels an increase in viscosity. In the present technique of viscose manufacture, the ripening process is not allowed to proceed to such an extent that this factor becomes of practical importance. 11 figures, 2 tables, and 8 references. E.S.

RESEARCH

BANKS, W. H. PATRA's research programme and the letterpress printer. PATRA J. 12, no. 2: 2-5 (July, 1949).

It is believed that closer study of letterpress printing and such materials as paper and inks will enable the results of various modifications to be predicted with more certainty and permit the specification of materials and conditions so as to produce a given result. With this idea as a basis, the PATRA research program includes work on printing pressure, the effects of distributing rollers, the working properties of inks, color, the printing qualities of paper, drying inks, elimination of static electricity, and improved methods of mounting blocks. R.R.

RIDDELL, G. L. Printing research. Paper Market: 76B, 76C, 77; 104, 106 (September, October, 1949).

Printing research may be carried out (*a*) within the printing firm, (*b*) within the supply houses, (*c*) in a central research institute, or (*d*) in the printing schools. Ideally, given unlimited money and manpower, the printing firm is the most desirable place, because of the close harmony possible between the printers and research men. Co-operative research, by means of an organization such as PATRA, has the advantage of greater resources, but cannot satisfactorily deal with the small problems of each member firm. The author stresses the importance of close co-operation between the scientist and the printer, first in clearly defining the problem and, after the research has been carried out, in applying the results. A few of the urgent problems of the printing industry are mentioned and types of research suggested. J.A.B.

RESEARCH LABORATORIES

ANON. Home of Hercules research; a visit to 700-acre Experiment Station. Pulp & Paper 23, no. 12: 70, 72 (November, 1949).

Brief reference is made to the facilities of the Wilmington, Del., Experiment Station of the Hercules Powder Co. and to the many direct or indirect applications of their research to the pulp and paper industry. 5 illustrations. E.S.

ANON. Micromeritics lab. Chem. Inds. 65, no. 4: 542, 544 (October, 1949).

A completely equipped laboratory has recently been created by the Georgia Tech Engineering Experiment Station for research on the characteristics and behavior of fine particles—a field of technology known as micromeritics. The laboratory has facilities for measuring particles ranging from those with macroscopic dimensions to those with an average diameter of less than 0.01 micron; the specific surface, the surface per unit weight or volume, is determined by means of suitable permeameters and low-temperature adsorption apparatus. Several of the special studies currently being investigated are listed. 7 illustrations. J.A.B.

GOSSETT, R. E. The laboratory of J. O. Ross Engineering Corporation. Paper Mill News 72, no. 48: 14-15 (Nov. 26, 1949).

A brief illustrated description of the facilities of the industrial-type laboratory of the corporation is given, where the best ways and means for solving heating, curing, and drying problems for the paper and allied industries are studied. The laboratory includes basic units which can be easily modified to meet particular needs. Some problems relating to the paper industry which have been handled in the laboratory during the past year are listed. E.S.

RHEOLOGY

NISSAN, ALFRED H. The rheology of paper. II. The general principles of rheology. Paper-Maker (London) 118, no. 4: 259-60, 262, 264, 266, 268 (October, 1949).

Although the name rheology is very young, man's interest in the art and science of rheology is very ancient. Rheology deals with the behavior of matter when subjected to mechanical deformation and studies, in general, the relations between stress, strain, and time. There are two major sets of methods used in rheology: the fundamental and deductive set of methods, and the empirical and inductive set. In the deductive methods the behavior of matter is worked out from first principles, and then deductions are made about the behavior of particular types of materials by inserting the special characteristics of these materials in the general equations. These deductions are then confirmed by observations. The two main subdivisions of the deductive methods are those in which materials are considered as continuous and those in which, on the other hand, they are treated as discontinuous in nature. The deductive methods cannot, as yet, be applied rigorously to the rheology of paper. In the empirical and inductive methods the behavior of particular materials is first observed experimentally and then these observations are subjected to inductive methods of reasoning, whereby more or less general principles of the rheological behavior of materials are worked out from the behavior of the particular materials studied. The two main subdivisions of these methods are the integral and the analytical methods. In the integral methods the behavior of materials is formulated, as a whole indivisible unit, into power laws. These laws or equations are extremely interesting and, until now, have been uniquely useful in evaluating subjective handling of soft solids. Unfortunately, they do not appear to be entirely suitable for the study of paper. The second subdivison is the analytical set of methods in which the over-all behavior is split into a sum of simpler component units. The analytical methods appear to be the only ones available at present, and in the immediate future, for the effective study of the rheology of paper. 7 figures. E.S.

STEENBERG, BÖRJE. The rheology of paper. I. The practical significance of paper rheology. Paper-Maker (London) 118, no. 4: 258-9 (October, 1949).

The rheological method is a technique by which the mechanical properties of paper are studied in detail while the paper is still doing useful service, in contrast to destructive routine testing. A complete study of the behavior of paper under stress and strain carried out with the aid of modern knowledge of high polymers is needed to allow a radical development of the existing testing technique, which is now 50 years old. Stress-strain studies are of interest to the practical papermaker, although few paper technologists are for the moment concerned about rheology. Examples of results on the viscoelastic properties of paper are given, which have been obtained by the

rheological technique and which could not have easily been obtained by routine testing (*cf.* B.I.P.C. 19: 255-6). The observation that the mechanical behavior of many apparently different materials is so similar seems to imply that there is a common denominator by which all these materials can be judged. This points to the mutually beneficial effect of collaboration with rheologists outside the field of paper. E.S.

SALESMEN AND SALESMANSHIP

PAPER SALES. Industrial plants are volume buyers of paper. Paper Sales 9, no. 11: 14-5, 44, 46 (November, 1949).

This is a market analysis dealing with the paper needs of industrial plants. In addition to the paper products necessary for plant maintenance, employees' use, in-plant feeding operations, and business office needs, there are those useful in the operation, production, and shipping ends of the plant. Here the paper salesman may use his ingenuity and technical information to devise new uses for his products and convince the manufacturer that these are more efficient and economical than his present methods. 5 illustrations. J.A.B.

SEMI-CHEMICAL PULPING PROCESS

GOODWIN, R. G. Recent developments in continuous pulping. Paper Mill News 72, no. 47: 114 (Nov. 19, 1949).

Brief reference is made to recent installations of Chemipulpers in variously located U. S. plants using alkaline or neutral cooking liquors. 1 illustration. E.S.

SETUP BOXES

ANON. A complete setup box every one and one-half seconds. Shears 67, no. 683: 10-11 (November, 1949).

The method described for the production of setup boxes comprises a tandem arrangement of two quad stayers, two New Jersey Speedfeed gluers, and two High Production model No. 152 Alpha wrappers. One man is required for keeping the quad stayers and Speedfeeds supplied with materials, and two girls at the end close covers coming from one line and boxes coming from the second line; this effects a reduction of at least seven workers. The operations from the feeding of the cornered-out blank into one end to the delivery of a completely wrapped box at the other end consume less than 35 seconds. 3 illustrations and 1 diagram. J.A.B.

ANON. Glossary of set-up box terms. Modern Packaging Encyclopedia, 1950: 280-1 [New York, Packaging Catalog Corp., c1949]

A list of terms is presented, including the nomenclature of the setup box proper, as well as of the machinery and materials used in its manufacture. E.S.

SHIPPING CONTAINERS

ANON. Boat in a box. Modern Packaging 23, no. 3: 118 (November, 1949).

The Beetle Boat Co. has solved its problem of shipping a 15-foot Fiberglas boat with a double-wall corrugated box made of A- and C-flute, 100% kraft, 0.023 outer-middle-inner liners, with 0.009 kraft corrugating medium. The completed boxes are bound with steel strapping. The cost is 50% less

than that of the wooden crates previously used, and the tare weight is reduced by 90%. 2 illustrations. J.A.B.

CALLAHAN, T. PAT. Miscellaneous packages. Chem. Inds. 65, no. 4: 535-6 (October, 1949).

Miscellaneous packages, comprising chiefly multiwall paper bags, fiber drums, and fiberboard boxes, are becoming increasingly useful in the chemical industry. Plastic coatings applied to multiwall paper bags make them suitable for shipping hygroscopic materials, and fiber drums can be specially treated so that they are greaseproof, stainproof, and chemical-resistant. Paper containers are generally cheaper than other types, and their low weight decreases shipping costs. J.A.B.

GENERAL ELECTRIC COMPANY. All corrugated refrigerator box. Fibre Containers 34, no. 10: 34, 52 (October, 1949).

Reference is made to an all-corrugated box for the shipment of refrigerators consisting of three pieces, a body in the form of a tube and a top and bottom, known as caps, which are securely held with metal strapping to the main body. The package as one unit is bolted to a hardwood skidboard. The container replaces the cleated corrugated style formerly used; it is about five pounds lighter in weight and claimed to reduce damage in shipment. The secret of the greater protection afforded by the new container is the inner packing consisting of scored sheets and built-up corrugated pads with cellulose wadding pads attached and held in place by steel strapping. The new box can be stacked six high without danger of crushing; it is specified as Package No. 994 in the Consolidated Freight Classification. E.S.

SHIPPING CONTAINERS—TESTING

BALKEMA, E. H. Analysis of corrugated boxes from buyer's viewpoint. Fibre Containers 34, no. 10: 54, 56, 61-2 (October, 1949).

The author describes the testing program of shipping boxes purchased by the Colgate-Palmolive-Peet Co. Mullen tests of the board were found to have no direct relationship to the ability of the case to withstand rough handling and properly protect its contents, except in the case of cans and similar merchandise. Compression tests, on the other hand, have proved to be the most practical. Results of such tests are cited. Each company must decide for itself which type of test is the most suitable to its needs and requirements. Big companies with their own testing facilities will not experience too many difficulties. Companies without such facilities should have adequate written specifications and follow one of two courses: insist that the supplier make tests and submit a detailed report to the buyer, or send samples of cases to a commercial laboratory and have them tested against written specifications. A check list of desirable specifications is included. 2 diagrams. E.S.

SILICATE OF SODA

MERRILL, REYNOLD C. Sodium silicates in the paper industry. Tappi 32, no. 11: 520-8 (November, 1949).

A summary of the pertinent literature references regarding the numerous applications of sodium silicates in the pulp and paper industry is presented. The references are grouped under the subheadings: sizing, coatings, deinking, rag and straw cooking, bleaching, activated silica sols (for water treatment), and miscellaneous. 2 tables and 97 references. E.S.

SLIME PREVENTION

BUCKMAN LABORATORIES, INC. Evaluation and control of slime losses. Paper Ind. 31, no. 8: 948-52 (November, 1949); *cf.* B.I.P.C. 19: 429, 584-5.

Following a general discussion of the factors making up the total loss caused by slime, a slime-control report form for assembling the pertinent data, the graphical presentation of the more important data for presentation to mill management, and the use of the Shewhart control chart for determining variables as an aid in the evaluation of a slime-control program, the use of BSM-11, Butrol, and Bufen (three phenylmercuric acetate preparations), their proper handling and shipping, and the correct methods of application are outlined. 1 diagram and 6 references. E.S.

BUCKMAN LABORATORIES, INC. Slime measuring unit. Paper Mill News 72, no. 43: 62 (Oct. 22, 1949).

The new Buckman slime-measuring unit provides a means for measuring the relative rate of slime accretion under different conditions. By its use, a simple laboratory filtration test can check water for freedom from fines and fiber to evaluate the efficiency of the saveall. A schematic drawing is given. R.R.

GILLASPIE, A. G. Chemicals for slime control. Paper Ind. 31, no. 8: 952-3 (November, 1949).

The different grades of Merfenelopes (phenylmercuric acetate preparations) as slimicides for the pulp and paper industry, their toxicity, safety precautions, handling and shipping, general effectiveness, and application are discussed. E.S.

VENABLES, J. V. Paper mill cleanliness, a contribution to slime control. Paper Mill News 72, no. 48: 8, 10-11, 18 (Nov. 26, 1949).

The author stresses the importance of cleanliness for slime control throughout the mill and gives directions for a scheduled shutdown and efficient cleanup of the newsprint machine, beater room, and sulfite and groundwood mills. The necessity for the additional use of chemicals will depend upon local conditions; the first and most important consideration before the application of slimicides is to have the system to be treated as clean as possible. This is especially true in the case of newsprint machines. Slime-controlling agents will loosen accumulated growths sufficiently to cause them to break away and follow the stock to the machine; very small portions of this slime are sufficient to cause a break on the machine. E.S.

STARCH

HIGGINBOTHAM, R. S., and MORRISON, G. A. The fractionation of starch. Part I. The estimation of amylose in the presence of amylopectin. J. Textile Inst. 40, no. 4: T201-7 (April, 1949).

Amylose and amylopectin, although chemically similar, differ sharply in their reactions with iodine; this forms the basis of methods for estimating amylose. These depend either upon the potentiometric determination of the amount of iodine absorbed under specified conditions, or upon measurement of the color intensity of the iodine complex, the former method being the more accurate. Under certain controlled conditions, the pure unfractionated amyloses of the common starches (sago, potato, tapioca, and maize) absorb

the same amount (21%) of iodine, whereas amylopectins absorb a negligible amount (0.5% or less). Essentially the method of Bates, French, and Rundle (*cf.* B.I.P.C. 13: 286) was used; the actual measurement of potential differences was avoided, however, by the use of two similar resistance-glass vessels equipped with platinum wire electrodes, glass stirrers, burets, and a glass bridge filled with saturated potassium chloride solution. The electrodes were connected to a sensitive galvanometer through a tapping key. The colorimetric method is also described, and the results obtained by this method are tabulated. 5 figures, 4 tables, and 18 references. J.A.B.

HIGGINBOTHAM, R. S., and MORRISON, G. A. The fractionation of starch. Part II. The separation of amylose and amylopectin. J. Textile Inst. 40, no. 4: T208-19 (April, 1949).

The purpose of this investigation was to determine whether sago, tapioca, potato, and maize starches could be separated quantitatively into two fractions consisting solely of amylose and amylopectin. By repeated crystallization of impure amyloses from very dilute solutions in water saturated with butanol, a limiting value of 21.0% was obtained for products including from 80 to 95% of the total amylose in the starches examined, and this figure is assumed to represent the value for pure unfractionated amylose. The iodine absorption of pure amylopectins, calculated from the iodometric titration data for slightly impure samples, ranged from 0.1 to 0.5% for the various starches. To detect any chemical modification of the starches which might have occurred during the separations, the intrinsic viscosities of the triacetates of the pure amyloses and amylopectins and, where possible, of the parent starches, were determined. Of the starches examined, sago was most easily separated into its components; tapioca and potato starches required stronger methods of dispersion. Maize starch exhibited a decided loss in total amylose upon recrystallization, perhaps as a result of the formation of aggregates containing both amylose and amylopectin. Full experimental details and results are given. 9 tables and 16 references. J.A.B.

SULFATE MILLS

KRAUSS, W. W. Modernization at Brunswick. Paper Mill News 72, no. 47: 66-7, 70 (Nov. 19, 1949).

The modernization program of the bleached sulfate mill at Brunswick, Ga., is outlined, including woodroom and woodyard facilities; washroom, screenroom, and bleach-plant facilities; an additional pulp drier; new evaporators; a new recovery unit and Cottrell precipitator; etc. Plans for additional expansion and modernization are under way. 8 illustrations. E.S.

SCHNYDER, A. P. Modernization of pulp mills. Paper Mill News 72, no. 47: 76, 78, 80 (Nov. 19, 1949).

Dealing primarily with the sulfate process, the author outlines possible improvements in wood handling, chipping and chip storage, cooking, pulp washing and storage, pulp drying, instrumentation, recovery plant, water supply, materials of construction for preventing slime, rust, and other contaminants, and buildings. The trend to outdoor installations in pulp mills in southern climates is a fairly recent development. E.S.

SEGALOWITZ, K. M. Waste fuels produce about 90% of pulp mill's steam needs. Power 93, no. 11: 86-9 (November, 1949).

A detailed illustrated description of the new boiler plant of the sulfate mill of the LongLac Pulp & Paper Co. at Terrace Bay, Ont., is given. Nearly

all process steam and that required for heating are obtained by burning black liquor in the recovery boiler and wood refuse (bark, cullwood, shavings, ends, sawdust, knots, etc.) in a Dutch-oven furnace. In addition, there are two pulverized-coal fired units with special arrangements to permit emergency firing of coal in the Dutch oven. Economy in the layout of steam mains was obtained by grouping the digesters and multiple-effect evaporators next to the boiler house. A flow diagram showing boiler-house uses and steam distribution to the different departments and a list of principal boiler-plant equipment are included. E.S.

STUBBS, J. C. Modernization at Bathurst Power and Paper Company Limited. Paper Mill News 72, no. 47: 102, 104, 106-7 (Nov. 19, 1949).

The modernization program of the company began in 1946 and will be completed in 1949. The improvements have been extended to nearly every department of the mill. Special reference is made to the new wood-handling facilities (*cf.* B.I.P.C. 19: 735, 816). E.S.

SULFITE MILLS

ANON. A new type of mill; progress at Celanese pulp plant. Pulp & Paper 23, no. 12: 38, 40-1 (November, 1949); *cf.* B.I.P.C. 17: 522.

An illustrated description of the present status of the construction of the sulfite mill of Columbia Cellulose Co. Ltd., Canadian subsidiary of Celanese Corp. of America, at Watson Island, near Prince Rupert, B.C., is given. The plant is expected to start operations early in 1951; plans call for 200 tons of high alpha pulp (acetylation grade). The process to be followed was developed by Celanese engineers and chemists at a 25-ton sulfite plant at Cumberland, Md., over a long testing period. E.S.

SULFITE PROCESS

BOSAEUS, ELIS. Mitscherlich's sulfite process in Sweden. Svensk Papperstidn. 52, no. 19: 474-80 (Oct. 15, 1949). [In Swedish]

The original Mitscherlich process was first introduced in Sweden in the years 1882-83. A brief description of the five mills which utilized this method is given. The Swedish engineer Victor Folin modified the original procedures and constructed his first vertical digester with indirect cooking at the new Billerud mill near Säffle, which started operations early in 1884. Since Folin's patented acid system did not function well, it was replaced with Mitscherlich limestone towers. The next installation of the Folin-Mitscherlich combination was constructed at the Storvik sulfite mill. A brief outline of the wood-preparation and cooking techniques during this period is given. In conclusion, the important developments in the sulfite process and the names of the contributors to these developments are briefly summarized. 11 illustrations. E.S.

SULFITE WASTE LIQUOR

BUTLER, W. T. Evaporation and burning of calcium base sulphite liquor; a report to the Waste Committee, Technical Section, Canadian Pulp and Paper Association. Pulp Paper Mag. Can. 50, no. 11: 108-21 (October, 1949).

Following a brief discussion of the group activities engaged in studies on sulfite waste liquor disposal and the factors involved in the problem, the

author reviews the pertinent literature on the only tonnage use of the waste as fuel, including materials of construction, the Rosenblad, Ramén, and Howard systems, the burning of concentrated liquors and dry solids, and the heat economy of the process. An appendix contains a partial bibliography with 52 abstracts of patents and articles on the subject. E.S.

STUMPF, WALTER. The pressure hydrogenation of sulfite waste liquor. Angew. Chem. 61, no. 10: 400-5 (October, 1949). [In German] *cf.* B.I.P.C. 17:730.

The pressure hydrogenation of aqueous alkaline sulfite waste liquors at 350° C. and 340-380 atm. initial hydrogen pressure in the absence of catalysts is catalyzed by the wall of the autoclave, made of steel containing nickel and chromium (V2A steel). Particularly steels with over 11% chromium content have a good catalytic action. Nickel and chromium are also good catalysts, whereas silver and steels low in nickel and chromium content have poor catalytic properties. At a ratio of sodium hydroxide to lignin of over 4:5, good hydrogenation results are obtained. The mixture becomes considerably lighter in color, and a separation of the reaction products into various layers takes place as the result of the formation of neutral products, phenols, and acids. The ratio of these products varies with the reaction conditions. At low alkali concentrations (below 10%) good yields of neutral products are obtained, whereas at concentrations over 10%, acids are the chief products, particularly when the autoclave is made of low nickel-chromium steel. The hydrogen consumed in the hydrogenation is not taken from the compressed hydrogen alone, but about one third of the absorbed hydrogen results from the conversion of alcohols into acids by alkali at the high temperatures. The major part of the sulfonic acid groups is split off as sulfite, as shown by the strong evolution of sulfur dioxide upon acidification of the hydrogenation mixture. A small part of the sulfonic acid groups is removed as sulfate, sulfide and thiosulfate ions. The lignin portion of lignosulfonic acid is converted quantitatively into ether-soluble products of which about two thirds are distillable and liquid at room temperature. On pyrolysis, over 50% of the phenolic portion of the lignin is transformed into liquid products. 4 tables, 9 figures, and 9 references. F.E.B.

SULFUR DIOXIDE

KATZ, MORRIS. Sulfur dioxide in the atmosphere and its relation to plant life. Ind. Eng. Chem. 41, no. 11: 2450-65 (November, 1949).

Sulfur dioxide from industrial gases in low concentrations is widely distributed in the atmosphere. In exposures of sufficient duration to concentrations higher than about 0.40 p.p.m. it may be toxic to sensitive plants at periods during the growing season when physiological activity is high and the conditions for rapid absorption of this gas by the leaves are at a maximum. However, low concentrations, in the range up to 0.10 to 0.20 p.p.m., have been demonstrated to be without influence on plant life, in the absence of visible markings. There is no effect, in this case, after long-continued exposure on rate of growth, yield of crop, photosynthesis, respiration, or on the daily march of the stomata. The effects may be beneficial if the plants are growing in a sulfur-deficient soil or nutrient. No basis has been found for the theory of invisible injury. The literature on the subject has been reviewed and the results of investigations carried out by the writer and his collaborators on various aspects of the sulfur dioxide pollution problem have been presented: occurrence of sulfur dioxide in the atmosphere of industrial areas; sulfur content of vegetation; effect on soils; symptoms and diagnosis of injury

from sulfur dioxide and other factors; retardation of diameter increment in conifers; experimental studies on the influence of environmental factors on susceptibility, the effects on conifers in natural habitat and transplanted stock, yield of crop plants, stomatal behavior, and photosynthesis and respiration. It is hoped that the methods and results described will serve as a guide in investigations of effects of other industrial waste gases on plant life. 14 tables, 9 figures, and 122 references. E.S.

TEXTILE INDUSTRY AND FABRICS—TESTING

WHITWELL, JOHN C., and TONER, RICHARD K. Moisture determination in textiles by electrical meters. Part III. Textile Research J. 19, no. 11: 755-8 (November, 1949); *cf.* B.I.P.C. 19: 509.

The authors report tests with a Moisture Register Model PD-1C-110, an a.c. instrument. The meter tested was designed for wool and, when properly used, gave results with a precision of ±0.35% moisture, which approaches closely the precision of oven measurements. When used on materials for which it was not intended, such as cotton sliver and acetate staple, the results were appreciably less precise. In common with other meters tested, measurements are sensitive to temperature changes and the presence of impurities. 1 table, 2 figures, and 2 references. E.S.

ULTRASONICS

DANSER, HAROLD W., and NEUMANN, ERNEST P. Industrial sonic agglomeration and collection systems. Ind. Eng. Chem. 41, no. 11: 2439-42 (November, 1949).

Physical variables involved in the design of industrial sonic agglomeration and collection systems for the recovery of fine particles in gases are discussed. Included are intensity and frequency of the sound field and exposure time of the aerosol therein. Examples are presented of installations used industrially to collect sulfuric acid fog, as well as soda ash from the recovery boiler of a paper mill. Finally, evaluation is made of the characteristics of those particular types of industrial fine particle collection problems which have been found to lend themselves to sonic agglomeration and collection treatment, and illustration is given of the many process industries having collection problems for which sonic collectors may be used. 6 figures and 5 references. E.S.

ST. CLAIR, HILLARY W. Agglomeration of smoke, fog, or dust particles by sonic waves. Ind. Eng. Chem. 41, no. 11: 2434-8 (November, 1949).

It has been observed by several investigators that aerosols may be rapidly agglomerated by intense high-frequency sound waves. The recent development of powerful sound generators opens the way for industrial utilization of this effect as another means of removing suspended matter from smoke and fumes. The forces acting to cause sonic agglomeration are complex. The more important factors seem to be a combination of the following: (1) covibration of particles in a vibrating gas; (2) attractive and repulsive hydrodynamic forces between neighboring particles; and (3) radiation pressure. 6 figures and 11 references. E.S.

WASTE GAS

SCHMIDT, WALTER A. Waste gases. Chem. Eng. News 27, no. 45: 3272-6 (Nov. 7, 1949).

The author reviews methods for the recovery of values from metallurgical furnace gases and ore-handling operations (including gravitational and inertial methods, filtration, scrubbing, and electrical precipitation) and discusses the possibilities of the ultrasonic method. E.S.

THOMAS, MOYER D., HILL, GEORGE R., and ABERSOLD, JOHN N. Dispersion of gases from tall stacks. Ind. Eng. Chem. 41, no. 11: 2409-17 (November, 1949).

The theoretical equations of Bosanquet and Pearson and Sutton for the dispersion of smoke from factory chimneys have been solved in terms of the conventional units of the smelting industry for the elimination of sulfur dioxide from four smelters. A large mass of field data for sulfur dioxide in the atmosphere, obtained by means of automatic recorders, has been evaluated in the form of Cu to M ratios, where C is the field concentration, M is the mass emission of sulfur from the plant, and u is the wind velocity. The data for tall stacks at Selby, Calif., Tacoma, Wash., Garfield, Utah, and El Paso, Tex., agree well with the theoretical equations, when values of the diffusion coefficients of 0.05 to 0.07 are used and the exponent of the distance, x, in Sutton's equation is 2 ($n = 0$). A somewhat smaller exponent may be needed to satisfy the data for the short stacks at Selby and El Paso. The theoretical curves and confirming data illustrate forcefully the beneficial effects of use of tall stacks in dispersing air contaminants from factories. Maximum ground concentration varies inversely with square of stack height. This results in lower peak and lower average concentrations from the tall stack and higher percentages of time when air is free of contamination. High temperature of smoke elimination increases effective stack height and improves dispersion. 7 tables, 6 figures, and 12 references. E.S.

WEIGHING MACHINERY

MERRICK SCALE COMPANY. Weightometer and Feedoweight. Paper Mill News 72, no. 43: 73 (Oct. 22, 1949).

The Merrick Weightometer with a loading-out counter enables paper-mill operators to fill digesters automatically with the proper amount of chips with no spilling or overflowing. It can also weigh and total the weight of chips produced daily. The Feedoweight is a conveyor-type scale used to feed bulk materials into process at a predetermined rate and keep a continuous record of them. R.R.

WOOD—DENSITY

SCHAFER, E. R. The influence of volume of summerwood and rate of growth on the specific gravity of southern pine pulpwood. Southern Pulp Paper Manuf. 12, no. 10A: 166-8 (Oct. 31, 1949).

The author discusses certain statistical relationships between specific gravity, summerwood content, and rate of growth of southern pine pulpwood. The variation of the specific gravity of springwood and of summerwood is discussed. Summerwood seems to be somewhat more variable than springwood. The data from 606 pulpwood-log cross sections comprising slash, loblolly, shortleaf, and longleaf pines were divided into growth-rate classes for study of the relationship between the specific gravity of the whole wood and the volume of summerwood. Equations connecting specific gravity and volume of summerwood within these growth-rate classes, and also outside of these classifications, were established. The effects of rate of growth, and the combined effect of summerwood and rate of growth on the specific gravity were also determined. Within the limits of the sample no significant correla-

tion was indicated between summerwood content and rate of growth. It was noted that about 72% of the variation of the specific gravity could be attributed to changes in the volume of summerwood when neglecting the influence of rate of growth, and about 31% could be attributed to variation in rate of growth when the influence of volume of summerwood was not considered. The mutual effects of summerwood and rate of growth accounted for about 80% of the variation in specific gravity. The remaining 20% of unknown factors possibly includes the effect of variations in fiber wall thickness, compression wood, heartwood, knots, decay, etc., as well as the experimental error. E.S.

WOOD—MENSURATION

CANADA. *Department of Mines and Resources. Dominion Forest Service.* Simplification of the continuous inventory method of calculating diameter growth. Pulp Paper Mag. Can. 50, no. 11: 152 (October, 1949).

The use of cumulative stand tables is recommended for simplifying the calculation of the number of trees rising out of a diameter class. An example is given. 2 tables. E.S.

WOOD—SACCHARIFICATION

APEL, ALFONS. Grape sugar from wood. Holz 3, no. 10: 186-8 (October, 1949). [In German; abstract only available]

The commercial hydrolyses used by the Bergin-Aktiengesellschaft at Mannheim-Rheinau for the utilization of logged wood waste (of less valuable species) is outlined. In a pretreatment, the hemicelluloses are dissolved and hydrolyzed with dilute hydrochloric acid. The sugars thus obtained are fermented to ethyl alcohol. The wood residues are dried and hydrolyzed with cold concentrated hydrochloric acid, which attacks cellulose (with a sugar yield of about 27%). The hydrochloric acid is evaporated *in vacuo*, and the residual sugar "inverted" and purified by an undescribed procedure. The crude sugar solution when evaporated yields crystalline D-glucose (I) (80-85%) which, on recrystallization, gives chemically pure (I). Mother liquors from (I) are also fermented. Potential marketing and the economics of the process are discussed. The claim is made that 3000 tons of firewood will yield approximately 1000 tons of glucose and that the concomitant lignin recovery represents almost 40% of the calorific value of the original wood. L.E.W.

WOOD OPERATIONS

ANON. Logging on Old Man River; it is different on the Mississippi. Pulp & Paper 23, no. 12: 92, 94, 96 (November, 1949).

The pulpwood logging operations for the U. S. Gypsum Co.'s Greenville, Miss., wallboard mill along the banks of the Mississippi River are described. The mill receives its pulpwood by barge, rail, or truck, depending on the distances. Originally, only willow and cotton wood were used, but since 1948, the company has been taking other hardwoods in addition. 7 illustrations. E.S.

ENGLISH, NORMAN. Pulpwood relogging on Vancouver Island. Can. Pulp Paper Ind. 2, no. 11: 24-5 (November, 1949).

A brief illustrated description is given of the relogging operations of the Powell River Co. on areas which had approximately 15 cords or more of

hemlock, balsam, and spruce "smallwood" left on the ground. Special machinery for yarding, hauling, and dumping had to be developed. The banded bundles are dumped into the salt water and rafted with broomsticks and swifters in the conventional manner; each section contains about 70 cords. 6 illustrations. E.S.

WOOD ROOM

ANON. New wood mill at Crown Zellerbach, Camas. Paper Ind. 31, no. 8: 940-3 (November, 1949); Paper Mill News 72, no. 47: 56, 58, 60 (Nov. 17, 1949); Tappi 32, no. 12: 66A, 68A, 70A (December, 1949).

The installations in the new woodroom are discussed. They include a new type log hoist for bundle rafts; a modified Bellingham-type hydraulic barker; a spudding and inspection station specially designed for the Camas mill; a whole-log chipper which can handle logs up to a 34-inch diameter; and auxiliary equipment. In conclusion, the old way of preparing wood for the digesters is outlined to emphasize the improvement in operations and shortcuts made possible by the new equipment. 8 illustrations. E.S.

WOOD WASTE

NORTHEASTERN WOOD UTILIZATION COUNCIL. Wood waste utilization. Northeastern Wood Utilization Council, Bull. no. 30: 1-27 (November, 1949).

The results of a field survey of the disposal of wood waste of the larger sawmills and wood-using plants in New England are presented and suggestions for improvement are made. The waste represents a certain percentage of the raw material and some way has to be found to dispose of the accumulation. Of the 245 plants visited with a total of 702,045 tons of waste per year (about 55% of the estimated annual waste of that area), 196,305 tons were sold, 337,915 tons were burned for fuel, and 167,825 tons were not used at all. Merely to haul it to a vacant field involves an expense of from $2.00 to $4.00 a ton. If a profitable use can be found, this expense is avoided and the cost of the plant's main operation reduced. If there is no other use for it, the material can be burned at the plant; however, it may be cheaper to secure power from coal or oil and sell the waste. Among the possibilities that should be explored are local fuel and cattle bedding, baled sawdust and shavings in carload lots, and truck or carload shipments to wood flour plants or hardboard manufacturers, if their specifications can be met. Activated carbon and charcoal production is worth consideration, as well as small-scale production of container board and the production of agricultural molasses for local sale. The broadest possibility is the establishment of wallboard plants at or near the supply of the raw material. Probably at least 20 tons a day in fairly steady volume would be necessary, the material to be secured from several sawmills or wood-working plants within commercial trucking distance. The supply of manufacturing waste could be supplemented by materials from neighboring woodlands, worked up from improvement cuttings or logging waste by one of the new portable chippers now on the market. For any type of waste utilization plant, the delivered price of the raw material should not exceed $5.00 a ton. 1 map, 3 tables, and 9 footnotes. E.S.

ZEIN

KEIM, CARROLL R. Zein as a calender size for paperboard. Paper Trade J. 129, no. 21: 25-6 (Nov. 24, 1949).

Water solutions of zein have been successfully applied to paperboard from

calender waterboxes. With solutions of 15-20% solids, single-side deposits as high as 1 lb./1000 sq. ft. can be obtained on most types of paperboard. Treatment greatly reduces penetration of subsequent coatings and increases gloss and resistance to oils, greases, waxes, inks and water, as well as improving scuff resistance and bursting strength. The method of preparation is described and the machine operation explained. 1 table. J.A.B.

Patent Section

Although the abstracts of the United States patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. The abstracts of the Canadian patents are prepared from the claims published in the* Canadian Patent Office Record. *In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Until the printing branch is in full operation and up to date, the printing of specifications will be several months behind.

ADHESIVES

KINGERLEY, RICHARD W., JR. Polyvinyl alcohol-starch-clay adhesives, processes, and products. U. S. patent 2,487,448. Filed March 1, 1944. Issued Nov. 8, 1949. 20 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 154-138]

An adhesive for a water-resistant laminated paperboard comprises the product resulting from the drying down, *in situ*, of an aqueous dispersion of swollen starch, polyvinyl alcohol, and kaolinitic, nonalkaline clay; the proportions of each material, on a dry, unswollen basis, are: 15-25 parts of starch, 15-25 parts of polyvinyl alcohol having a viscosity of 400-1000 centipoises (measured as an 8% solution at 78° F.), and 50-70 parts of clay. The proportion of water is such that the viscosity of the liquid adhesive is 700-2500 centipoises at 78° F. E.G.S.

YOUNG, HARLAND H., and HOLLOWAY, DONALD F. Adhesive. Canadian patent 460,954. Filed Oct. 24, 1945. Issued Nov. 8, 1949. 8 claims. Assigned to Swift & Company.

A remoistenable adhesive material comprises a fibrous backing member which is coated on at least one surface with a water-soluble thermosetting phenol-formaldehyde or melamine-formaldehyde resin in a dry, nontacky state. The resin coating is free of polymerization catalysts; however, the resin is readily converted to a water-soluble polymerized state upon remoistening with an aqueous solution containing a water-soluble catalyst. In this manner, the adhesive material may be held for a prolonged period prior to use without impairing the adhesive properties of the material. E.G.S.

BARKERS AND BARKING

SWIFT, FRANK H. Hydraulic debarking method. U. S. patent 2,488,041. Filed Oct. 3, 1946. Issued Nov. 15, 1949. 3 claims. Assigned to Crown Zellerbach Corporation. [Cl. 144-309]

Hydraulic debarking nozzles are described which can be used for cants and slabs as well as whole logs; each nozzle removes the bark in a wide, longitudinally-extending strip. E.G.S.

BLEACHING

McEWEN, ROBERT L., and SHELDON, FRED R. Bleaching or brightening web or sheet of pulp or paper. Canadian patent 461,241. Filed Dec. 29, 1947. Issued Nov. 22, 1949. 10 claims. Assigned to Buffalo Electro-Chemical Company, Inc.

A chemical wood pulp and a wood pulp containing ligneous and noncellulosic material are bleached separately; the bleached pulps are blended in a water suspension and felted into a web or sheet; a bleaching solution containing hydrogen peroxide and a water-soluble phosphate and having an initial pH of 9.0-11.5 is applied to the felted material; water is removed by evaporation. E.G.S.

NORTA, TURMA, and SIVOLA, YRJO. Process of making and refining chemical pulp. Canadian patent 461,267. Filed Nov. 7, 1947. Issued Nov. 22, 1949. 3 claims. Assigned to Enso-Gutzeit Osakeyhtio.

Washed, defibered, and strained chemical pulp is chlorinated, partially washed by water, and then heated as a 1-15% aqueous suspension at a temperature not over 100° C. for 10-200 minutes at a pH less than 5. E.G.S.

BLEACHING—GROUNDWOOD

McEWEN, ROBERT L., and SHELDON, FRED R. Bleached paper and method of bleaching the same. Canadian patent 461,242. Filed Dec. 29, 1947. Issued Nov. 22, 1949. 8 claims. Assigned to Buffalo Electro-Chemical Company, Inc.

A web or sheet of felted wood pulp containing ligneous and noncellulosic material is bleached by the application of an aqueous peracetic acid solution (pH 6-9) and subsequent evaporation of water from the web or sheet. The dry bleached material should have a pH less than 7. E.G.S.

McEWEN, ROBERT L., and SHELDON, FRED R. Paper furnish constituent and method of making the furnish. Canadian patent 461,240. Filed Dec. 29, 1947. Issued Nov. 22, 1949. 21 claims. Assigned to Buffalo Electro-Chemical Company, Inc.

Wood pulp containing substantial amounts of ligneous and noncellulosic materials is dewatered in order to provide a moist felted pulp which can be handled without physical disintegration; an alkaline peroxide solution having a total alkalinity of 0.35-1.1% by weight sodium oxide equivalent based on bonedry pulp is applied to the moist felted pulp in an amount which is insufficient to reduce the consistency of the pulp materially and is sufficient to impregnate and bleach the pulp; the felted pulp is allowed to remain in a moist condition to effect bleaching; without further chemical additions, the impregnated felted pulp is incorporated in a paper furnish. The alkaline peroxide solution contains a peroxide and an alkaline salt selected from the group consisting of sodium silicate, trisodium phosphate, sodium pyrophosphate, and sodium tetraphosphate. E.G.S.

BOARD

McKEE, RALPH H. Process for the treatment of lignin containing cellulosic material. Canadian patent 461,373. Filed April 16, 1947. Issued Nov. 29, 1949. 14 claims.

Paper pulp is produced by digesting a lignin-containing cellulosic material with a hydrotropic solution at 160-180° C. to yield a crude fiber pulp and washing the crude pulp with water; the lignin is precipitated from its solution directly on the fibers. E.G.S.

BOARD—SHEET FORMATION

CLARK, JAMES D'A., and WELLS, SIDNEY D. Apparatus for forming fibrous sheets or paperboard. U. S. patent 2,489,079. Filed April 18, 1946. Issued Nov. 22, 1949. 8 claims. Assigned to The Institute of Paper Chemistry. [Cl. 154-29]

An apparatus is provided for forming building board of uniform consistency by depositing on a moving screen, by means of pressure and suction, an airborne mixture of fiber and fine particles of a thermosetting adhesive, to which heat and pressure are subsequently applied. E.G.S.

BOARD SPECIALTIES

BENGELSDORF, GEORGE. Article holder. U. S. patent 2,488,262. Filed Sept. 22, 1947. Issued Nov. 15, 1949. 2 claims. Assigned to The Brookport Company. [Cl. 211-51]

A holder for napkins, menus, and the like is made from bendable material such as cardboard or fiberboard; the holder is formed from a flat integral blank. E.G.S.

BROW, JOHN C. Lid for jars, bottles, and like containers. U. S. patent 2,487,519. Filed Sept. 24, 1945. Issued Nov. 8, 1949. 2 claims. [Cl. 215-38]

A lid for jars, bottles, and the like comprises a ring of relatively stiff material such as cardboard which is sheathed within a thin flexible covering of parchment paper which is folded by a suitable die to extend down outside the ring and up inside the ring. A skirt is thus formed on the lid which engages the container rim to hold the lid in position. E.G.S.

DOBIE, GEORGE N., JR. Folder. Canadian patent 461,154. Filed Oct. 9, 1948. Issued Nov. 15, 1949. 12 claims. Assigned to Supervision Incorporated.

A paper folder is folded along transverse score lines into a multi-ply formation; one of the plies has a locking tongue formed from its own stock and another ply has a slit to receive the tongue. E.G.S.

FLUSS, FELIX F., and JELLINEK, GEORGE. Combination packing and display device. U. S. patent 2,487,123. Filed May 21, 1946. Issued Nov. 8, 1949. 7 claims. [Cl. 206-65]

A corrugated board or cardboard packing and display device is adapted to hold bulky and elongated articles, such as racks, towel bars, and kitchen utensils. E.G.S.

HARRIS, WALTER K. Foldable cabinet. U. S. patent 2,486,745. Filed March 25, 1946. Issued Nov. 1, 1949. 4 claims. [Cl. 229-41]

A foldable wardrobe may be made of any suitable thin material such as metal, plywood, paper, paperboard, or fiberboard; the fiberboard construction is described. E.G.S.

JAMES, LOUISE. Combined box handle and partition. U. S. patent 2,489,034. Filed July 8, 1946. Issued Nov. 22, 1949. 4 claims. Assigned to Huye Space Saving Box System Inc. [Cl. 229-15]

A combined box handle and partition adapted for use with chick or poultry shipping boxes is fabricated of fiberboard, cardboard, or other light sheet material; the sheet material is reinforced by folding in such a manner that a multi-ply structure is attained at the areas of greatest stress. E.G.S.

MCFALL, WILLIAM W., and KESTNER, FRED O. Shirt packaging device. U. S. patent 2,487,761. Filed Feb. 14, 1948. Issued Nov. 8, 1949. 5 claims. Assigned to Package Masters, Inc. [Cl. 223-71]

A paperboard shirt-packaging device is constructed so that excessive creasing of the shirt is avoided; the packaged shirts can be boxed in standard paperboard cartons and folding boxes. E.G.S.

PAULSEN, NEAL I. Holder for attached collars. U. S. patent 2,488,139. Filed Feb. 15, 1946. Issued Nov. 15, 1949. 1 claim. [Cl. 223-83]

A paperboard collar-protecting device is inserted in the collar of a laundered shirt; crushing of the collar is avoided. E.G.S.

STONE, GEORGE F. Bottle carrier. U. S. patent 2,487,491. Filed Dec. 28, 1945. Issued Nov. 8, 1949. 2 claims. Assigned to The Canister Company, Inc. [Cl. 229-52]

The side and end walls of a bottle carrier for soft drinks are formed of chipboard, cardboard, or the like; the wall material may be waterproofed and is preferably formed from a single sheet of multi-ply material, the ends of which are joined by a binding strip. The bottom of the carrier is formed of sheet metal. E.G.S.

BROKE

SHERMAN, LAURENCE R., and BENSON, W. RONALD. Utilization of waste wax paper. U. S. patent 2,488,515. Filed May 10, 1945. Issued Nov. 15, 1949. 6 claims. Assigned one half to Nopco Chemical Company and one half to Crown Zellerbach Corporation. [Cl. 92-1.6; changed to 92-21]

This is equivalent to Canadian patent 447,034; *cf.* B.I.P.C. 18: 565. E.G.S.

CELLULOSE—HYDROGENATION

GÜRKAN, HAMIT H. Catalytic hydrogenation of cellulose to produce oxygenated compounds. U. S. patent 2,488,722. Filed Nov. 14, 1946. Issued Nov. 22, 1949. 8 claims. [Cl. 260-594]

A method for the preparation of alcohols, glycols, and hydroxyketones from cellulose comprises dissolving cellulose in Schweizer's reagent, hydrogenating the resulting cellulose solution at 140-190° C. under pressure for about two hours to form a coprecipitate of cellulose and metallic copper, hydrogenating the coprecipitate at 240-332° C. under a pressure of 700 p.s.i. in the presence of water and hydrogen for about five hours to convert the cellulose into liquid and gaseous products containing alcohols, glycols, and hydroxyketones, and separating the conversion products. E.G.S.

DISPENSING CONTAINERS

PARKER, HENRY C. Dispensing carton. U. S. patent 2,488,323. Filed April 18, 1946. Issued Nov. 15, 1949. 7 claims. [Cl. 229-17]

A dispensing carton has a top formed of flaps sealed one above the other; an outer flap comprises a pouring spout blank defined by cuts at the top and sides and at the base by a hinge coinciding with and forming part of the fold of the flap. E.G.S.

FOAM

MAGUIRE, MILTON J. Frothing agent and method of production. Canadian patent 461,274. Filed Jan. 11, 1944. Issued Nov. 22, 1949. 19 claims. Assigned to Hercules Powder Company.

A dry frothing agent consists of a mixture of neutral dry rosin size and sodium or potassium caseinate in the ratio of 30:70 to 70:30; the agent forms a stable foam in the presence of gypsum. The material is adapted to the manufacture of acoustical tile and the like. E.G.S.

FOLDING BOXES

BUTTERY, KENNETH T. Collapsible tray or carton. U. S. patent 2,488,703. Filed Dec. 29, 1945. Issued Nov. 22, 1949. 14 claims. Assigned to Sutherland Paper Company. [Cl. 229-32; changed to 229-35]

The end walls and corner flaps of a collapsible tray or carton are wider than the side walls and support a transparent wrapper so that the goods are visible. E.G.S.

BUTTERY, KENNETH T. Collapsible tray or carton. U. S. patent 2,488,704. Filed April 9, 1948. Issued Nov. 22, 1949. 10 claims. Assigned to Sutherland Paper Company. [Cl. 229-35]

This represents a modification of U. S. patent 2,488,703; see above. It is claimed that hand and machine erection are facilitated. E.G.S.

BUTTERY, KENNETH T., and STENGER, RICHARD C. Collapsible tray or box. U. S. patent 2,488,706. Filed Sept. 10, 1948. Issued Nov. 22, 1949. 7 claims. Assigned to Sutherland Paper Company. [Cl. 229-35]

A collapsible tray or box formed from an integral blank has interlocking walls which are supported against bulging and collapsing stresses. This is an adaptation of U. S. patent 2,488,703; see above. E.G.S.

BUTTERY, KENNETH T., and STENGER, RICHARD C. Collapsible tray or box and box member. U. S. patent 2,488,705. Filed Sept.

10, 1948. Issued Nov. 22, 1949. 6 claims. Assigned to Sutherland Paper Company. [Cl. 229-35]

A tray or box formed of an integral blank may be shipped flat and set up manually or by machine. The invention is an embodiment of U. S. patent 2,488,703; see above. E.G.S.

CHEMLINSKI, RAYMOND. Carton. U. S. patent 2,486,554. Filed Feb. 8, 1946. Issued Nov. 1, 1949. 2 claims. [Cl. 229-16; changed to 120-4]

An ink bottle carton is constructed so that it may be set up as a stand for the ink bottle; certain parts of the carton may be arranged to form a rack for pens and pencils. E.G.S.

GREVE, HERMAN L. Folding box. U. S. patent 2,488,121. Filed Oct. 1, 1946. Issued Nov. 15, 1949. 2 claims. [Cl. 229-14; changed to 229-33]

A pulpboard cigar box has a simulated-wood cover and a metal-foil moisture-retaining liner; the box is of the folding or setup type and can be shipped and stored in a flat condition. E.G.S.

SULLIVAN, JOHN J. Pouring carton. Canadian patent 461,178. Filed Jan. 7, 1948. Issued Nov. 15, 1949. 1 claim. Assigned one half to Lawrie L. Witter.

This is the same as U. S. patent 2,436,981; *cf.* B.I.P.C. 18: 566. E.G.S.

GUMS AND RESINS

HEPTING, GEORGE H. Stimulation of production of oleoresins and gums in coniferous trees. U. S. patent 2,436,359. Filed Nov. 18, 1947. Issued Feb. 17, 1948. 9 claims. Assigned to the United States of America as represented by the Secretary of Agriculture. [Cl. 47-10]

When introduced into artificial wounds made in the trunks of Virginia, shortleaf, and longleaf pine, a species of Fusarium fungus isolated from pitch cankers of Virginia pine will induce a copious and prolonged flow of oleoresin. E.G.S.

INTERIOR PACKING

DAWSON, KENWOOD S. Die-cut insert for gun packing cases. U. S. patent 2,487,528. Filed July 15, 1948. Issued Nov. 8, 1949. 10 claims. Assigned to Waterbury Corrugated Container Co. [Cl. 206-46]

A number of corrugated cushion members are provided for protecting and holding a completely assembled gun during shipment in such a manner as to prevent movement of the gun in any direction by its inertia or momentum. E.G.S.

LIGNIN

KATZEN, RAPHAEL. Alkoxyl lignin halide resins and process. U. S. patent 2,486,419. Filed Nov. 15, 1945. Issued Nov. 1, 1949. 3 claims. Assigned to Diamond Alkali Company. [Cl. 260-124]

A light-colored, transparent to translucent, thermoplastic alkoxyl lignin chloride resin is prepared by refluxing a methanol solution of methoxyl lignin chloride at a temperature below 150° C. for 10-20 hours, while the solution is in contact with benzoyl peroxide and under a chlorine atmosphere. E.G.S.

MACHINERY—CORRUGATING MACHINE

GOETTSCH, WALTER J. Heating system for corrugating machines. U. S. patent 2,487,647. Filed Nov. 27, 1945. Issued Nov. 8, 1949. 14 claims. Assigned to Samuel M. Langston Co. [Cl. 154-32]

A machine for making double-faced corrugated paper includes a series of plates over which the paper passes, means for passing steam through the plates, means for separating condensate but not noncondensable gases from the steam discharged from the plates, and means for moistening and heating a sheet delivered to the double facer with the steam and gases. E.G.S.

MACHINERY—DOCTORS

BAKER, HERBERT A. Doctor blade and mounting. U. S. patent 2,487,409. Filed Dec. 21, 1945. Issued Nov. 8, 1949. 2 claims. Assigned to Vickerys Limited. [Cl. 92-74]

A doctor blade holder is constructed to permit free longitudinal flexure of the blade in conforming to variations in the surface of the roll; the blade is replaceable. E.G.S.

LYON, WILLIAM. Oscillating doctor for paper machines. Canadian patent 461,300. Filed Nov. 7, 1947. Issued Nov. 22, 1949. 9 claims.

A doctor blade support is given a reciprocating motion by a hydraulic motor. E.G.S.

MACHINERY—DRIVE, ELECTRIC

GOODWILLIE, JOHN E., and BEACHLER, EDWARD D. Motor drive for papermaking machines. U. S. patent 2,487,702. Filed March 2, 1946. Issued Nov. 8, 1949. 9 claims. Assigned to Beloit Iron Works. [Cl. 192-.02]

A control arrangement for papermaking machines is adapted to govern the operation of a clutch which effects the coupling of two independently rotating mechanisms; the solenoid-controlled clutch acts to couple an independently driven rotating mechanism and a tie-in shaft only in response to the energizing of the driving motor for the driven rotating mechanism. E.G.S.

MACHINERY—FOLDING MACHINE

BISHOP, NATHANIEL. Pin control for web folding machines. U. S. patent 2,486,703. Filed March 13, 1947. Issued Nov. 1, 1949. 9 claims. Assigned to Time, Inc. [Cl. 270-71]

A folder pin control apparatus for web folding machines operates effectively at relatively high speeds; an electrically energized low-mass solenoid actuates the pins. E.G.S.

MACHINERY—GUIDE ROLLS

HORNBOSTEL, LLOYD. Wire guide. U. S. patent 2,488,294. Filed

May 29, 1947. Issued Nov. 15, 1949. 10 claims. Assigned to Beloit Iron Works. [Cl. 74-241]

A wire- or felt-guiding mechanism is provided for papermaking machines; the movements of a light-weight feeler member are greatly amplified in force by a multistage fluid-pressure control mechanism in order to shift a movable bearing on the wire- or felt-supporting roll in the proper direction and amount to return the wire or felt to a predetermined neutral axial position on the roll. E.G.S.

MACHINERY—JOGGERS

BURKE, WILLIAM F. Stacking method and apparatus therefor. Canadian patent 461,156. Filed April 23, 1946. Issued Nov. 15, 1949. 6 claims. Assigned to Syntron Company.

A paper jogger includes a horizontal table which is resiliently supported for vibration; the amplitude of vibration of the table can be regulated electrically in order to adapt it to the character of the paper being jogged. E.G.S.

MACHINERY—PACKAGING MACHINERY

SALFISBERG, LEROY L. Machine and method for packaging and crushing tablets. U. S. patent 2,478,505. Filed Jan. 30, 1946. Issued Aug. 9, 1949. 4 claims. Assigned to Ivers-Lee Company. [Cl. 93-3]

An apparatus is provided for sealing tablets between two strips of a sheet material such as paper or cellophane by crimping or corrugating the edges of the strips; means are included for crushing the tablet within the package. The device is particularly adapted to the use of a thermoplastic, heat-sealable sheet material. E.G.S.

SUMIDA, KUNIO A. Wrapping machine. U. S. patent 2,486,892. Filed June 27, 1946. Issued Nov. 1, 1949. 8 claims. Assigned to Miller Wrapping and Sealing Machine Company. [Cl. 93-2]

A machine is designed to apply a paper or cellophane wrap to rectangular prismoidal boxes or packages which are conveyed through the machine in a straight line at a uniform rate, without interruption or change of position. 33 figures are included. E.G.S.

MACHINERY—PAPER MACHINE

BIDWELL, GEORGE L. Apparatus for paper manufacture. U. S. patent 2,488,700. Filed May 17, 1945. Issued Nov. 22, 1949. 2 claims. Assigned to Riegel Paper Corporation. [Cl. 92-44]

A papermaking machine produces a paper which more nearly approaches handmade paper than the paper made by either a cylinder or Fourdrinier machine. A short endless wire screen travels upwardly at an angle of about 15° between a pond of diluted stock and the suction box; the screen passes over rolls which are arranged in triangular relation. The over-all length of the machine is about eight feet. E.G.S.

MACHINERY—PASTING MACHINE

RIDDLE, WALTER S. Spot cementing apparatus for laminating machines. U. S. patent 2,488,685. Filed June 2, 1945. Issued Nov.

22, 1949. 2 claims. Assigned to Seaman Paper Company. [Cl. 91-47]

A machine is adapted to apply spots of adhesive in transverse rows across the surface of one strip of fibrous material and to bring the adhesive-coated strip into tight engagement with another strip of material to form a multiply strip. The spots of adhesive material are preferably applied to the surface of one strip by means of reciprocable plungers arranged for vertical movement through a tank of adhesive fluid and then into spot contact with the surface of the strip to be coated. During the adhesive-applying operation, the treated strip and an untreated strip are drawn into tight engagement with each other by means of a pair of feed rolls which determine the linear speed of the strips and also serve to compress the strips transversely to form a firm bonded connection. E.G.S.

SHIELDS, ALBERT F. Tape prefeeder. U. S. patent 2,488,339. Filed March 3, 1948. Issued Nov. 15, 1949. 5 claims. Assigned to S & S Corrugated Paper Machinery Co., Inc. [Cl. 271-2.3]

A tape-feeding apparatus is arranged so that it will positively pull the tape off a supply roll at a faster rate than the tape is applied to the folded carton; sufficient slack is maintained for the tape to be applied to the blank without strain on the tape. E.G.S.

WEEKS, NORMAN E. Apparatus for adhesively uniting sheet materials. U. S. patent 2,489,210. Filed Dec. 7, 1946. Issued Nov. 22, 1949. 10 claims. Assigned to Bemis Bro. Bag Company. [Cl. 154-1.6]

An apparatus is provided for adhesively uniting sheet materials, particularly paper valve sleeves in bag valves, by means of a thermoplastic adhesive. E.G.S.

MACHINERY—SHEET-FEEDING MECHANISM

BATTERSBY, JAMES E. Cutting and counting, or counting and marking sheets of paper, card and the like. Canadian patent 460,781. Filed July 17, 1947. Issued Nov. 1, 1949. 9 claims. Assigned to Masson Scott & Company Limited.

An apparatus for counting and marking sheets cut from a paper web includes an electromagnetically controlled device for feeding the web to a rotary cutter. E.G.S.

FEW, WILLIAM. Strip material loop control. U. S. patent 2,487,755. Filed Sept. 11, 1947. Issued Nov. 8, 1949. 18 claims. Assigned to The Clark Controller Company. [Cl. 318-6]

A motor is provided for maintaining a loop in a strip or web of material between the supply source and the feeding mechanism; a motor-speed regulator is responsive to variations in the length of the loop. E.G.S.

SCHNEIDER, WALTER E. Sheet feeding apparatus. Canadian patent 461,058. Filed Dec. 8, 1944. Issued Nov. 15, 1949. 4 claims. Assigned to Dexter Folder Company.

A suspended-type pile elevator is provided with two laterally spaced bars which are adapted to support longitudinally spaced cross beams for carrying a pile of sheets. E.G.S.

MACHINERY—SUCTION BOXES

WADLEIGH, GEORGE R. Suction box cover. U. S. patent 2,487,202. Filed Aug. 7, 1943. Issued Nov. 8, 1949. 1 claim. Assigned one half to West Virginia Pulp and Paper Company. [Cl. 92-51]

The suction box of a Fourdrinier machine is provided with a cover in which the perforations are inclined from the top to the bottom of the cover, in the direction of wire travel. The water leaving the wire or felt is prevented from splashing and less vacuum is required within the suction box. E.G.S.

MACHINERY—SWEAT ROLLS

OFFEN, BERNARD. Apparatus for chilling webs. Canadian patent 461,010. Filed June 8, 1948. Issued Nov. 15, 1949. 29 claims.

Openings are spaced at a predetermined distance radially from the wall of a cylindrical hollow shell, so as to maintain a desired level of cooling liquid within the shell; a stationary drain box is located at one end of the shell. E.G.S.

MATERIALS HANDLING

BOUCHER, NAZAIRE. Log loading device for trucks. Canadian patent 460,820. Filed Dec. 21, 1945. Issued Nov. 8, 1949. 6 claims.

An apparatus for loading logs on a truck is fastened to the platform of the truck. E.G.S.

BRIDEGROOM, WALTER. Loading hoist. U. S. patent 2,487,305. Filed May 16, 1947. Issued Nov. 8, 1949. 4 claims. Assigned to Superior Tree Expert Co., Inc. [Cl. 212-145; changed to 214-75]

A trailer-carried loading hoist is adapted to lift poles off a railroad car or rack and deposit them in proper loaded position on a truck trailer; the hoist may be operated by a winch on the truck. E.G.S.

PAPER—COATED

FAEBER, HARRY W. Coating machine and method. Canadian patent 461,508. Filed Sept. 20, 1947. Issued Nov. 29, 1949. 9 claims. Assigned to Time, Inc.

A coating mechanism comprises means for supporting a web and moving it continuously, at least three applicator rollers, and means for supplying layers of coating material of equal thickness to the first and last applicator rollers and a layer of greater thickness to the second applicator roller; the applicator rollers are adapted to apply successive layers of coating material to the web in the order named. E.G.S.

PAPER SIZING

DRESHFIELD, ARTHUR C. Sizing compositions. U. S. patent 2,488,385. Filed March 23, 1945. Issued Nov. 15, 1949. 13 claims. Assigned to Hercules Powder Company. [Cl. 106-230]

A dry saponified rosin size comprises saponified rosin stabilized with a suitable secondary organic amine (e.g., phenyl-2-naphthylamine, *N*-methyl-2-naphthylamine, or diphenylamine) in an amount sufficient to provide resistance to atmospheric oxidation and 15-25% (by weight of the entire composition) of a wax incorporated with the saponified rosin. The wax in-

creases the resistance of the size to oxidation and renders the material virtually nondusty. E.G.S.

SHERMAN, LAURENCE R. Process of wax sizing papermaking fibers using a cationic surface active agent. U. S. patent 2,487,899. Filed May 10, 1945. Issued Nov. 15, 1949. 4 claims. Assigned to Nopco Chemical Company. [Cl. 92-21]

This is equivalent to Canadian patent 448,588; *cf.* B.I.P.C. 18: 728-9. E.G.S.

PAPER SPECIALTIES

ALLENDER, SAMUEL S. Shipping tag. U. S. patent 2,486,726. Filed March 30, 1946. Issued Nov. 1, 1949. 5 claims. Assigned to The Harshaw Chemical Company. [Cl. 282-19]

A two-portion shipping tag is arranged so that one portion is used for the outgoing trip and the other for the return trip; the two parts are so related that only the appropriate tag is visible at any given instant. E.G.S.

COHEN, MEYER. Drinking cup of sheet material. U. S. patent 2,487,100. Filed Aug. 19, 1947. Issued Nov. 8, 1949. 5 claims. [Cl. 229-1.5; changed to 229-7]

A paper cup incorporates a drinking straw in the body of the cup; the cups may be nested for insertion in vending machines or tubular magazines. E.G.S.

FARRELL, ROBERT A. Food package. Canadian patent 461,283. Filed March 22, 1948. Issued Nov. 22, 1949. 3 claims. Assigned to Marathon Corporation.

A yeast package consists of a cake of fresh yeast completely enclosed in a sheet material; the wrapper comprises a relatively impermeable outer paper-base sheet material, a thermoplastic moistureproof adhesive coating on the base sheet, and a relatively porous creped tissue paper inner liner. The creped liner is in contact with the yeast cake and is capable of absorbing moisture from the yeast. E.G.S.

FLOOD, CARL A. Slip-loop string tag. U. S. patent 2,488,280. Filed May 11, 1945. Issued Nov. 15, 1949. 3 claims. Assigned to Dennison Manufacturing Company. [Cl. 40-20]

A shipping or labeling tag is provided with a string-loop extending through a hole in the tag. E.G.S.

FRISCHER, BLANCHE. Paper bag construction. U. S. patent 2,487,643. Filed Aug. 14, 1948. Issued Nov. 8, 1949. 8 claims. [Cl. 229-68]

A paper shopping bag is equipped with cardboard-reinforced handles. E.G.S.

MORRIS, VLON N. Primer. Canadian patent 461,454. Filed March 6, 1943. Issued Nov. 29, 1949. 7 claims. Assigned to Johnson & Johnson Limited.

This is the same as U. S. patent 2,424,996; *cf.* B.I.P.C. 18: 72-3. E.G.S.

PIKE, CHARLES O., and MORRIS, VLON N. Barrier coat for adhesive sheets. U. S. patent 2,487,060. Filed Nov. 20, 1946. Issued Nov. 8, 1949. 5 claims. Assigned to Industrial Tape Corporation. [Cl. 117-122; changed to 117-76]

A synthetic rubber barrier coat between the adhesive layer and the porous backing (e.g., paper, cloth, or woven glass) of an adhesive sheet serves to prevent penetration of the adhesive material into the backing. The following is a typical barrier coat composition: 47.58% GR-S copolymer, 32% zinc oxide, 12.5% hydrogenated rosin glyceride, 8% petroleum hydrocarbon oil (largely alicyclic), 0.21% pentamethylene thiuram tetrasulfide, and 0.21% butyl zimate. E.G.S.

PORTNOY, ISER S. Dry cleaning and laundering label. Canadian patent 460,845. Filed Feb. 18, 1948. Issued Nov. 8, 1949. 2 claims.

A laundry label made of wet-strength paper has a body portion and a number of adjacent ticket portions which are detachable. E.G.S.

PRATT, VERNEUR E., and GRAY, GEORGE F. Pad of sensitized paper. U. S. patent 2,488,434. Filed Aug. 30, 1945. Issued Nov. 15, 1949. 6 claims. [Cl. 95-19]

A sensitized-paper pad is provided for microfilm printers; successive sensitized sheets can be removed from the pad, leaving the remaining sheets covered by a protective light-tight cover. E.G.S.

SEXTON, FRANCIS G. Pad of continuous stationery. Canadian patent 461,151. Filed Nov. 10, 1947. Issued Nov. 15, 1949. 14 claims. Assigned to W. H. Smith & Son Limited.

A continuous stationery pad comprises a strip of paper folded into zigzag form; the strip is provided with a longitudinally extending line of weakening adjacent to one edge; the edge portions of the successive layers of the strip outside the weakening line are secured together to form a stub from which the strip may be removed by tearing along the line of weakening. E.G.S.

WILLIAMSON, JOHN A. Abrasive manufacture. Canadian patent 460,886. Filed Oct. 23, 1946. Issued Nov. 8, 1949. 16 claims. Assigned to The Carborundum Company.

This is equivalent to U. S. patent 2,418,282; *cf.* B.I.P.C. 17: 537. E.G.S.

PHYSICAL TESTING—PAPER—TENSILE STRENGTH

VAN DER KORPUT, ARNOLDUS J. J. M. Apparatus for determining the strength of paper and other foliaceous material. U. S. patent 2,487,908. Filed Oct. 2, 1946. Issued Nov. 15, 1949. 6 claims. [Cl. 73-98]

A method and apparatus are described for determining the tensile strength of paper and other foliaceous material; the errors introduced by the narrowness and excessive area of the test strip, by damaged and cut fibers, and by subjectivity are eliminated. Means are provided for reading directly the force which is exerted at the moment of rupture of the sample. E.G.S.

PLASTIC FILMS (NONCELLULOSIC)

PETERS, LEO. Package wrapper. Canadian patent 461,205. Filed Oct. 7, 1948. Issued Nov. 22, 1949. 7 claims; *cf.* B.I.P.C. 18: 616-17.

An oleomargarine wrapper is formed from a translucent web of flexible material; a perforated flexible strip holds a frangible capsule of coloring matter against the inner wall of the wrapper. E.G.S.

PLASTICS—PAPER-BASE

PRANCE, ALVIN W., and LYIJYNEN, FRED. Method and apparatus for making plastic articles. Canadian patent 461,410. Filed June 26, 1947. Issued Nov. 29, 1949. 5 claims. Assigned to Briggs Manufacturing Company.

This is the same as U. S. patent 2,466,966; *cf.* B.I.P.C. 19: 676. E.G.S.

RAYON—VISCOSE PROCESS

SCHLOSSER, PAUL H., and GRAY, KENNETH R. Cellulose. Canadian patent 460,777. Filed July 3, 1944. Issued Nov. 1, 1949. 25 claims. Assigned to Rayonier Incorporated.

This is the same as U. S. patent Reissue 23,013; *cf.* B.I.P.C. 18: 885. The original was U. S. patent 2,432,127; *cf.* B.I.P.C. 18: 344. E.G.S.

SCHLOSSER, PAUL H., and GRAY, KENNETH R. Production of cellulosic product. Canadian patent 460,778. Filed Oct. 12, 1945. Issued Nov. 1, 1949. 18 claims. Assigned to Rayonier Incorporated.

This is equivalent to U. S. patent 2,451,558; *cf.* B.I.P.C. 19: 294. E.G.S.

SHIPPING CONTAINERS

BELSINGER, JACK R. Multicompartment container. U. S. patent 2,487,293. Filed June 17, 1947. Issued Nov. 8, 1949. 7 claims. Assigned to Belsinger, Inc. [Cl. 229-15]

A container has several inner members which can be individually filled with different commodities (e.g., fruits) and delivered to an assembly point at which they are combined with outer members; the outer closure pieces interfit and abut one another, and the inner members provide a strong intermediate partition within the total package. E.G.S.

HUNSWORTH, MELVIN T. Container. U. S. patent 2,488,194. Filed July 22, 1946. Issued Nov. 15, 1949. 11 claims. Assigned to Container Corporation of America. [Cl. 229-23]

A paperboard box or container is rigid and nonweaving; integral means for anchoring an opening rip cord are incorporated in the container. E.G.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

SHARKEY, WILLIAM E. Method of forming valve bags. U. S.

patent 2,488,038. Filed Aug. 23, 1946. Issued Nov. 15, 1949. 11 claims. Assigned to The Raymond Bag Company. [Cl. 93-35]

A valve sleeve for cement bags and the like can be inserted mechanically during the manufacture of the bag. E.G.S.

SHIPPING CONTAINERS—PALLETIZING

SPROLLE, JOSEPH V. Pallet. U. S. patent 2,489,054. Filed Sept. 7, 1946. Issued Nov. 22, 1949. 4 claims. Assigned to The National Sugar Refining Company. [Cl. 206-46]

By providing a pallet having horizontal outwardly extending flanges, by filling the intermediate space on the pallet with packages up to the level of the flanges, by arranging the packages above this level so as to extend over the flanges, by stacking the packages so as to interlock them, and by adhesively securing the packages together and to the pallet and flanges, a combination is produced which permits the use of a pallet formed of a single sheet of comparatively lightweight flexible composition material. A mutual bracing and strengthening effect is secured between the pallet and the packages which enables relatively heavy loads to be carried by such a pallet without sagging, buckling, or spreading. E.G.S.

SOUNDPROOFING

PARÉ, VICTOR T. Diffraction type sound absorber with fibrous walls. U. S. patent 2,488,555. Filed Jan. 27, 1944. Issued Nov. 22, 1949. 4 claims. Assigned to Radio Corporation of America. [Cl. 181-33]

A sound-absorbing material includes an outer layer of fibrous material which is relatively rigid, self-supporting, and impervious to the passage of sound waves except through openings in the material; an inner layer consists of loosely arranged fibers which provide a relatively limp, soft, fluffy layer integral with the outer layer; intertwined passages in the inner layer offer a large dissipative impedance to sound waves. The fibers of the outer layer may be constituted by cotton linters, shredded wood, sulfite pulp, kraft pulp, or mixtures of these materials; the inner layer may be formed of wool fibers with or without a mixture of shredded wood. E.G.S.

STRAW

DREYFUS, HENRY. Process for producing acetylatable cellulose from straw. U. S. patent 2,487,114. Filed Oct. 3, 1945. Issued Nov. 8, 1949. 6 claims. Assigned to Celanese Corporation of America. [Cl. 92-13]

Cellulose suitable for acetylation is produced from straw by pretreatment with a dilute sodium hydroxide solution at 100-125° C., mechanical disintegration of the pretreated straw, and subjection of the disintegrated material in two stages at 50-60° C. to the action of an aqueous solution resulting from mixing 10-20% of hydrogen peroxide and 7-20% of sodium hydroxide (calculated on the dry weight of the untreated straw), both in aqueous solution. The concentration of alkali (calculated as sodium hydroxide) is 0.5-2.5%. E.G.S.

SULFITE WASTE LIQUOR

GRANGAARD, DONALD H. Process for preparing phenolic material from a lignin substance. U. S. patent 2,488,186. Filed Aug. 8,

1947. Issued Nov. 15, 1949. 15 claims. Assigned to Sulphite Products Corporation. [Cl. 260-621]

Catechol is produced from lignin-containing substances such as sulfite waste liquor, kraft black liquor, etc., by subjecting the lignin substance to a stable amine hydrohalide (e.g., aniline hydrochloride, tributylamine hydrochloride, or dimethylaniline hydrochloride) reaction mixture at 200-300° C. for about two hours, acidifying the reaction mixture with hydrochloric acid, and recovering the catechol from the acidified mixture. E.G.S.

TALL OIL

OTHMER, DONALD F., and PAPPS, GEORGE. Recovery of stearic and abietic acid from hydrogenated tall oil. U. S. patent 2,486,974. Filed Aug. 11, 1944. Issued Nov. 1, 1949. 8 claims. [Cl. 260-97.5]

Stearic acid is recovered from hydrogenated tall oil by the introduction of an organic solvent solution of the oil into an activated carbon adsorbent column; elution of the adsorbed material with an organic solvent to extract abietic acid in pure form, leaving a mixture of stearic and abietic acids on the adsorbent; continuation of the eluting process to recover a mixed fraction of stearic and abietic acids; and removal of the remaining stearic acid in pure form with the organic solvent. The elutions are preferably carried out at about 15° C.; nitropropane-1, petroleum ether, or isopropanol may be used as the solvent. E.G.S.

TAYLOR, GEORGE E., METCALF, JOE S., and BRANSCOMB, LEWIS L. Process of separating the constituents of tall oil and similar mixtures. U. S. patent 2,487,000. Filed Dec. 3, 1945. Issued Nov. 1, 1949. 31 claims. Assigned to Monsanto Chemical Company. [Cl. 260-97.5; changed to 260-97.6]

A crystalline abietic acid has the following properties: acid number 182.6, rosin acid number 180.4, saponification number 184.7, unsaponifiables 1.7%, and specific rotation 12.2°. The crystals are melted and heated to 280-290° C. in a carbon dioxide atmosphere. Steam is bubbled into the molten mass at the rate of 5 g./min. for 80 minutes. Steaming is discontinued, and the product is maintained at 280-290° C. for about three hours in a carbon dioxide atmosphere. The material is cooled in an inert atmosphere to 150-170° C. and poured into a paper boat. On setting the product has the following properties: acid number 158, rosin acid number 157, saponification number 162.5, unsaponifiables 9%, dehydroabietic acid 23%, specific rotation 41°, and softening point 80° C. The product is adapted for the manufacture of pale varnishes, ester gum, modified synthetic resins, white paper size, soap, medicinal adhesive tape, and the like. E.G.S.

TEXTILE INDUSTRY AND FABRICS—FIREPROOFING

BRINKER, HOWARD C. Heat resistant flexible resin coated sheet material. Canadian patent 461,285. Filed Dec. 17, 1945. Issued Nov. 22, 1949. 10 claims. Assigned to Minnesota Mining & Manufacturing Company.

A flexible fibrous sheet material is reinforced by coating with a polyester-base resinous composition formed by mixing a minor proportion of an organic solvent-soluble straight phenol-formaldehyde reaction intermediate with a major proportion of a viscous, organic solvent-soluble, thermally reactive, acidic linear glycol-dicarboxylic acid polyester-type alkyd resin;

the coated sheet is heated to about 60° C. for a sufficient time to react the resinous composition to a water-, solvent-, and heat-resistant solid nonthermoplastic stage. E.G.S.

MCLEAN, ANDREW, and MARRIAN, STANLEY F. Process for flameproofing combustible cellulosic material and product resulting therefrom. Canadian patent 461,113. Filed Jan. 8, 1947. Issued Nov. 15, 1949. 12 claims. Assigned to Imperial Chemical Industries Limited.

This is the same as U. S. patent 2,470,042; *cf.* B.I.P.C. 19: 749-50. E.G.S.

PINGREE, RAYMOND A., and ACKERMAN, RAYMOND C. Flame resistant materials. U. S. patent 2,488,034. Filed Nov. 18, 1943. Issued Nov. 15, 1949. 1 claim. Assigned to Sun Chemical Corporation. [Cl. 117-136]

A method is given for flameproofing textiles and paper to be used for draperies, awnings, and interior decorations, and in molding compositions. One mole of guanyl urea phosphate is heated with 2-3 moles of formaldehyde at 40-100° C. until a clear, colorless, slightly viscous, water-soluble condensation product is formed; further polymerization results from heating the material to a hard, infusible, insoluble state after impregnation in the paper or fabric, in the presence of a melamine-formaldehyde resin and stearoyloxymethylpyridinium chloride. E.G.S.

VANILLIN

SANKEY, CHARLES A., and MARSHALL, HARRY B. Separation of vanillin from alkaline solutions. U. S. patent 2,489,200. Filed Sept. 28, 1946. Issued Nov. 22, 1949. 1 claim. Assigned to The Ontario Paper Company Limited. [Cl. 260-600]

Vanillin is separated in the form of its sodium salt from an aqueous alkaline solution by extraction of the solution with tertiary butyl alcohol. E.G.S.

AUTHOR INDEX TO BOOKS

American Paper and Pulp Association 228
American Society for Engineering Education. *Minnesota Branch* 229
Barker, H. A., ed. 228
Clifton, C. E., ed. 228
Forker, G. M., ed. 227
Gay, R. M. 229
Griffin, C. E. 227
Hamilton, A. 229
Hardy, H. L. 229
Hodgman, C. D., ed. 227
Husmann, W., ed. 230
Ingersoll, A. C. 228
Ingersoll, L. R. 228
Jenkinson, B. L. 229
Kelley, K. K. 229, 230
Kuhn, R. 227
Lange, N. A., comp. and ed. 227
Lockwood 230
Lundberg, A. H. 229
Mills, G. J. 228
Minnesota. University. *Institute of Technology* 229
Monroe, A. H. 229
News Print Service Bureau 228
Northeastern Wood Utilization Council 230
Raffel, S., ed. 228
Skillin, M. E. 229
Socony-Vacuum Laboratories 228
Special Libraries Association. *Science-Technology Group*, ed. 228
Special Libraries Council of Philadelphia and Vicinity. *The Science-Technology Group* 228
Symposium on Engineering Research 229
U. S. Bureau of Agricultural Economics 228
U. S. Bureau of Mines 229, 230
U. S. Bureau of the Census 229
U. S. Dept. of Agriculture 228
U. S. Office of Military Government for Germany. *Field Information Agencies Technical* 227
U. S. Office of Technical Services ... 228
U. S. Tariff Commission 229
Webster, N. 228
Ziegler, K. 227
Zobel, O. J. 228

AUTHOR INDEX TO ABSTRACTS

The letter P preceding a page number indicates a patent abstract.

Abersold, J. N. 277
Ackerman, R. C. .....P 296
Allender, S. S. .....P 291
Anable, A. 248
Anderson, J. B. 253
Apel, A. 278
Appalachian Coals, Inc. 240
Appling, J. W. 253
Arthur, J. C., Jr. 261
Baker, H. A. .....P 287
Balkema, E. H. 271
Banks, W. H. 268
Battersby, J. E. .....P 289
Beachler, E. D. .....P 287
Beloit Iron Works .....P 287, P 288
Belsinger, J. R. .....P 293
Belsinger, Inc. .....P 293
Bemis Bro. Bag Company .....P 289
Bengelsdorf, G. .....P 283
Benson, W. R. .....P 284
Berg, C. 248
Bergman, S. I. 242
Berman, N. R. 248
Bidwell, G. L. .....P 288
Bishop, N. .....P 287
Blakemore, F. T. 251
Borden, G. C., Jr. 233
Bosaeus, E. 274
Boucher, N. .....P 290
Boyle, R. L. 248
Branscomb, L. L. .....P 295
Bridegroom, W. .....P 290
Briggs Manufacturing Company ....P 293
Brinker, H. C. .....P 295
Bristol Company 245
The Brookport Company .....P 283
Brow, J. C. .....P 283
Brown, D. L. 244
Buckman Laboratories, Inc. 272
Buffalo Electro-Chemical Company, Inc. .....P 282
Burke, W. F. .....P 288
Butler, W. T. 274
Buttery, K. T. .....P 285
Caldwell, C. G. 231
Caldwell, H. B. 248
Callahan, T. P. 271
Cam, R. H. B. 240
Canada. *Department of Mines and Resources. Dominion Forest Service* 278
The Canister Company, Inc. .....P 284
The Carborundum Company .....P 292
Carson, F. T. 263
Celanese Corporation of America ...P 294
Cermack, R. W. 248
Chemical Industries 247
Chemlinski, R. .....P 286
Clark, J. d'A .....P 283
The Clark Controller Company .....P 289
Clarkson, D. L. 255
Cohen, M. .....P 291
Coles, R. V. 262
Container Corporation of America .....234, P 293
Cotton, R. T. 245
Coupe, R. R. 262, 266
Croney, R. G. W. 263
Crown Zellerbach Corporation P 281, P 284
Danser, H. W. 276
Datta, S. P. 240
Dawson, K. S. .....P 286
Day, C. W. R. 243
Day, F. T. 232, 259
Dennison Manufacturing Company .P 291
Dexter Folder Company .....P 289
Diamond Alkali Company .....P 286
Dobie, G. N., Jr. .....P 283
Dougherty, J. C. 241
Downingtown Manufacturing Company 250
Dreshfield, A. C. .....P 290
Dreyfus, H. .....P 294
du Pont de Nemours, E. I., & Company .....P 281
Edge, J. 250
English, N. 278
Enso-Gutzeit Osakeyhtio .....P 282
Faeber, H. W. .....P 290
Farber, L. 254
Farrell, R. A. .....P 291
Fearnside, K. 267
Few, W. .....P 289
Fife, R. A. 256
Flood, C. A. .....P 291
Fluss, F. F. .....P 283
Fortune 266
Fowler, R. M. 256
Frankenfeld, J. C. 245
Frischer, B. .....P 291

Gadd, G. O. 244
Garnatz, G. 235
General Electric Company 271
Gillaspie, A. G. 272
Glauner, E. N. 251
Goettsch, W. J. ..... P 287
Gollin, N. W. 255
Goodwillie, J. E. ..... P 287
Goodwin, R. G. 270
Gossett, R. E. 269
Grangaard, D. H. ..... P 294
Gray, A. W. 246
Gray, G. F. ..... P 292
Gray, K. R. ..... P 293
Greve, H. L. ..... P 286
Gruner, E. 233
Gürkan, H. H. ..... P 284
Guthrie, J. C. 237
Hale, J. D. 232
Hamilton, B. 260
Hardy, W. L. 260
Harris, W. K. ..... P 284
Harrison, V. G. W. 260
The Harshaw Chemical Company ... P 291
Haskins, F. A. 240
Hayes, F. N. 238
Hepting, G. H. ..... P 286
Hercules Powder Company .. P 285, P 290
Higginbotham, R. S. 272, 273
Hill, G. R. 277
Hoffman, J. J. 248
Holloway, D. F. ..... P 281
Hornbostel, L. ..... P 287
Hufnagel, J. A. 248
Hulme, R. E. 239
Hummel, F. E., Jr. 252
Hunsworth, M. T. ..... P 293
Huye Space Saving Box System, Inc. ..... P 284
Imperial Chemical Industries Limited ..... P 296
Industrial Tape Corporation ..... P 292
The Institute of Paper Chemistry .. P 283
Ivers-Lee Company ..... P 288
Jäger, A. 237
James, L. ..... P 284
Jayme, G. 266
Jellinek, G. ..... P 283
Johnson & Johnson Limited ..... P 291
Johnstone, H. F. 251
Jones, W. P. 251
Kanowitz, S. B. 248
Karpinski, J. 254
Katz, M. 275
Katzen, R. ..... P 286
Keim, C. R. 279
Kenney, J. W. 231
Kestner, F. O. ..... P 284
Kingerley, R. W., Jr. ..... P 281
Kohlins, W. D. 248
Krauss, W. W. 273
Landes, C. G. 239
Langston, Samuel M., Co. ..... P 287
Larsson, O. G. 244
Latimer, K. B. 263
Leeds Sales Company, Inc. *Specialty Package Division* 260
Lenz, E. C. 231
Lin, C.-H. 238
Lindsay, F. H. 246
Long, J. K. 265
Lyijynen, F. ..... P 293
Lyon, W. ..... P 287
Lyons, E. J. 248
McArdle, M. 248
McArn, T. A. 248
McCarthy, J. L. 247
MacDonald, J. D. 231
Macdougall, G. 231, 254
McEwen, R. L. ..... P 282
McFall, W. W. ..... P 284
McIntosh, D. C. 232
McKee, R. H. ..... P 283
McLean, A. ..... P 296
MacLeod, N. D. 255
Maguire, M. J. ..... P 285
Marathon Corporation ..... P 291
Markham, A. E. 247
Marrian, S. F. ..... P 296
Marsden, K. E. 241
Marshall, H. B. ..... P 296
Masson Scott & Company Limited .. P 289
Mehta, P. C. 237
Mennell, P. B. 266
Merewether, J. W. T. 247
Merrick Scale Company 277
Merrill, R. C. 271
Metcalf, J. S. ..... P 295
Meyer, K. H. 236
Miller, S. A. 248
Miller Wrapping and Sealing Machine Company ..... P 288
Minneapolis-Honeywell Regulator Co. *Brown Instruments Division* 264
Minnesota Mining and Manufacturing Company ..... 238, P 295
Mitchell, H. K. 240
Monsanto Chemical Company ..... P 295
Morden Machines Company 264
Morehouse, W. B. 239
Morris, V. N. ..... P 291, P 292
Morrison, G. A. 272, 273
Murphy, E. A. 245, 253
Murphy, J. J. 248
The National Sugar Refining Company ..... P 294
Naysmith, D. 244
Nebiker, R. 231
Neese, E. H., Jr. 248
Neubrech, W. L. 257
Neumann, E. P. 276
Nichols Engineering and Research Corporation 252
Nissan, A. H. 269
Nopco Chemical Company .... P 284, P 291
Norta, T. ..... P 282
Northeastern Wood Utilization Council 279
Offen, B. ..... P 290
The Ontario Paper Company Limited ..... P 296
Osborne, C. 259
Othmer, D. F. ..... P 295
Otten, P. S. 248
Overell, B. G. 240
Package Masters, Inc. ..... P 284
Pacsu, E. 237
Paper Sales 261, 270
Papps, G. ..... P 295
Paré, V. T. ..... P 294
Parker, H. C. ..... P 285
Parker, L. T. 240, 258
Parsons, B. M. 249
Paulsen, E. M. 265
Paulsen, N. I. ..... P 284
Peniston, Q. P. 247
Penn, W. S. 264
Perry Processes 234
Peters, L. ..... P 293
Pike, C. O. ..... P 292
Pingree, R. A. ..... P 296
Plehn, P. C. 233
Porphyre, J.-A. 242
Portnoy, I. S. ..... P 292

Prance, A. W. ..... P 293
Pratt, V. E. ..... P 292
Prevost, B. E. 249
Radio Corporation of America ..... P 294
Ramsbottom, J. M. 236
Rånby, B. G. 236
The Raymond Bag Company ..... P 294
Rayonier Incorporated ..... P 293
Redniss, A. 248
Reliance Electric & Engineering Company 249
Riddell, G. L. 268
Riddle, W. S. ..... P 288
Riegel Paper Corporation ..... P 288
Roberts, M. H. 251
Rogers, D. P. 233
S & S Corrugated Paper Machinery Co., Inc. ..... P 289
Saeman Paper Company ..... P 289
St. Clair, H. W. 276
St. John, E. 266
St. Regis Paper Company 252
Salfisberg, L. L. ..... P 288
Samuelson, O. 267
Sankey, C. A. ..... P 296
Schafer, E. R. 277
Schlosser, P. H. ..... P 293
Schmidt, W. A. 241, 276
Schneider, W. E. ..... P 289
Schnyder, A. P. 273
Schøpp, P. L. 248
Schroeder, C. S. 252
Segalowitz, K. M. 273
Sergeant, S. V. 241
Sexton, F. G. ..... P 292
Shallcross, R. E. 239
Sharkey, W. E. ..... P 293
Shaw, E. N. 267
Sheldon, F. R. ..... P 282
Shema, B. F. 253
Sherman, L. R. ..... P 284, P 291
Shields, A. F. ..... P 289
Shonkwiler, F. L. 246
Sivola, Y. ..... P 282
Skelly, J. F. 248
Smith, E. H. 257
Smith, J. C. 248
Smith, L. E. 248
Smith, W. H., & Son Limited ..... P 292
Sprolle, J. V. ..... P 294
Stack-Dunne, M. 240
Steenberg, B. 269
Steffens, H. G. 262
Stenger, R. C. ..... P 285
Stewart, A. E. 250
Stone, G. F. ..... P 284
Strickland, W. B. 245
Stubbs, J. C. 274
Studer, M. 236
Stumpf, W. 275
Sullivan, J. J. ..... P 286
Sulphite Products Corporation ..... P 295
Sumida, K. A. ..... P 288
Sun Chemical Corporation ..... P 296
Superior Tree Expert Co., Inc. ..... P 290
Supervision Incorporated ..... P 283
Sutherland Paper Company ... P 285, P 286
Swift, F. H. ..... P 281
Swift & Company ..... P 281
Syntron Company ..... P 288
Taylor, G. E. ..... P 295
Technical Association of the Pulp and Paper Industry 238, 253, 254
Thilmany Pulp and Paper Company .. 261
Thomas, M. D. 277
Time, Inc. ..... P 287, P 290
Tinker, E. W. 258
Toner, R. K. 276
Tudor, J. A. 235
U. S. Dept. of Agriculture. *Secretary of Agriculture* ..... P 286
Urbain, W. M. 236
Van den Akker, J. A. 255
van der Korput, A. J. J. M. ..... P 292
Vander Velde, M. H. 251
van der Wyk, A. J. A. 236
Venables, J. V. 272
Vickerys Limited ..... P 287
W. H. S. 244
Wadleigh, G. R. ..... P 290
Waterbury Corrugated Container Co. . P 286
Weeks, N. E. ..... P 289
Weleber, A. F. 235
Wells, S. D. ..... 232, P 283
West, C. J. 261
West Virginia Pulp and Paper Company ..... P 290
White, A. D. 254
Whitwell, J. C. 276
Williamson, J. A. ..... P 292
Witter, L. L. ..... P 286
Woodcock, I. 233
Wright, W. G. 246
Young, H. H. ..... P 281
Yunker, W. S. 246
Zambito, A. T. 264

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A monthly bulletin is issued, listing all new books and periodicals added to the library and containing titles and abstracts of articles published during the previous month in the field of pulp and paper chemistry and technology. The annual index carries a list of periodicals currently received.

At a reasonable cost the librarian will furnish complete reference lists on chemical and technical problems for member mills, and will procure translations, photostats, or abstracts of the articles listed. Upon request, member mills working on special problems will be kept in touch with new publications related to their work.

Reviews of new publications pertaining to the field of pulp and papermaking will be included from time to time.

The library is open daily with the exception of Sundays from 8:00-5:00 and from 7:30-9:30. Saturday it closes at 5:00 o'clock.